



APPENDIX A

Total Maximum Daily Loads for Toxic Pollutants in Marina del Rey Harbor

State of California
California Regional Water Quality Control Board, Los Angeles Region

RESOLUTION NO. 2005-012
October 6, 2005

**Amendment to the *Water Quality Control Plan for the Los Angeles Region* to
Incorporate a Total Maximum Daily Load for Toxic Pollutants in Marina del Rey
Harbor**

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region, finds that:

1. The Federal Clean Water Act (CWA) requires the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) to develop water quality objectives, which are sufficient to protect beneficial uses for each water body found within its region. Water bodies that do not meet water quality objectives or support beneficial uses are considered impaired.
2. A consent decree between the U.S. Environmental Protection Agency (USEPA), Heal the Bay, Inc. and BayKeeper, Inc. was approved on March 22, 1999. This court order directs the USEPA to complete Total Maximum Daily Loads (TMDLs) for all impaired waters within 13 years. A schedule was established in the consent decree for the completion of the first 29 TMDLs within 7 years, including completion of a TMDL to reduce metals and organic compounds in Marina del Rey Harbor by March 22, 2006. The remaining TMDLs will be scheduled by Regional Board staff within the 13-year period.
3. The elements of a TMDL are described in 40 CFR 130.2 and 130.7 and section 303(d) of the CWA, as well as in USEPA guidance documents (Report No. EPA/440/4-91/001). A TMDL is defined as the sum of the individual waste load allocations for point sources, load allocations for nonpoint sources and natural background (40 CFR 130.2). Regulations further stipulate that TMDLs must be set at levels necessary to attain and maintain the applicable narrative and numeric water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality (40 CFR 130.7(c)(1)). The regulations in 40 CFR 130.7 also state that TMDLs shall take into account critical conditions for stream flow, loading and water quality parameters.
4. The numeric targets in this TMDL are not water quality objectives and do not create new bases for enforcement against dischargers apart from the existing water quality standards they translate. The targets merely establish the bases through which load allocations (LAs) and waste load allocations (WLAs) are calculated. WLAs are only enforced for a discharger's own discharges, and then only in the context of its National Pollutant Discharge Elimination System (NPDES) permit, which must be consistent with the assumptions and requirements of the WLA. (40 C.F.R. 122.44(d)(vii)(B)). The Regional Board will develop permit requirements through subsequent permit actions that will allow all interested persons, including but not limited to municipal storm water dischargers, to provide comments on how the WLA will be translated into permit requirements.

5. As envisioned by Water Code section 13242, the TMDL contains a "description of surveillance to be undertaken to determine compliance with objectives." The Compliance Monitoring and Special Studies elements of the TMDL recognize that monitoring will be necessary to assess the on-going condition of Marina del Rey Harbor and to assess the on-going effectiveness of efforts by dischargers to reduce toxic pollutant loading to the harbor. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. The TMDL does not establish the requirements for these monitoring programs or reports, although it does recognize the type of information that will be necessary to secure. The Regional Board's Executive Officer will issue orders to appropriate entities to develop and to submit monitoring programs and technical reports. The Executive Officer will determine the scope of these programs and reports, taking into account any legal requirements, and issue the orders to the appropriate entities.
6. Upon establishment of TMDLs by the State or USEPA, the State is required to incorporate the TMDLs along with appropriate implementation measures into the State Water Quality Management Plan (40 CFR 130.6(c)(1), 130.7). This Water Quality Control Plan for the Los Angeles Region (Basin Plan), and applicable statewide plans, serves as the State Water Quality Management Plans governing the watersheds under the jurisdiction of the Regional Board. Attachment A to this resolution contains the Basin Planning language for this TMDL.
7. The Marina del Rey watershed area is approximately 2.9 square miles located in Santa Monica Bay, California. It is south of Venice and north of Playa del Rey, and approximately 15 miles southwest of downtown Los Angeles. The watershed includes City of Los Angeles, Culver City and some unincorporated areas of Los Angeles County. The proposed TMDL addresses impairments of fish tissue and sediment quality caused by metals, and organic compounds in the back basins of Marina del Rey Harbor.
8. "[I]t is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited." (33 U.S.C. 1251(a)(3)). Water quality standards reflect this express national policy of Congress. When a pollutant is present in the water column at levels in excess of the California Toxics Rule, then the pollutant is present in toxic amounts. Discharges of toxic pollutants can also accumulate in sediments and fish tissue. This TMDL addresses the accumulation of toxic pollutants in sediments and fish tissue and attempts to implement express Congressional policy.
9. The Regional Board's goal in establishing the Marina del Rey Harbor Toxic Pollutants TMDL is to protect the aquatic life and wildlife beneficial uses of Marina del Rey Harbor and to achieve sediment quality to protect these beneficial uses.
10. Regional Board staff have prepared a detailed technical document that analyzes and describes the specific necessity and rationale for the development of this TMDL. The technical document entitled "Total Maximum Daily Load for Toxic Pollutants in Marina del Rey Harbor" is an integral part of this Regional Board action and was reviewed, considered, and accepted by the Regional Board before acting. Further, the technical document provides the detailed factual basis and analysis supporting the problem statement, numeric targets (interpretation of the narrative and numeric water quality objectives, used to calculate the pollutant allocations), source analysis, linkage analysis, waste load allocations (for point sources), load allocation (for nonpoint sources), margin of safety, and seasonal variations and critical conditions of this TMDL.

11. On October 6, 2005, prior to the Board's action on this resolution, public hearings were conducted on the Marina del Rey Toxics TMDL. Notice of the hearings were sent to all known interested persons and published in the Los Angeles Times on August 3, 2005 in accordance with the requirements of Water Code Section 13244.
12. The public has had reasonable opportunity to participate in review of the amendment to the Basin Plan. A draft of the Marina del Rey Toxics TMDL was released for public comment on August 3, 2005. A Notice of Hearing and Notice of Filing were published and circulated 45 days preceding Board action, and Regional Board staff responded to oral and written comments received from the public. The Regional Board held a public hearing on October 6, 2005 to consider adoption of the TMDL.
13. In amending the Basin Plan, the Regional Board considered the applicable requirements set forth in Sections 13240 and 13242 of the California Water Code. These state requirements are considered in light of the unqualified requirement of section 303(d)(1)(C) of the Clean Water Act that the TMDL shall be established at a level necessary to implement the applicable water quality standards.
14. The amendment is consistent with the State Antidegradation Policy (State Board Resolution No. 68-16), in that it does not authorize any lowering of water quality and is designed to implement existing water quality objectives. Likewise, the amendment is consistent with the federal Antidegradation Policy (40 CFR 131.12).
15. Because the TMDL implements existing water quality objectives, the Regional Board has consistently maintained (along with the State Water Resources Control Board) that adopting a TMDL does not require the water boards to consider the factors of Water Code section 13241. The consideration of the Water Code section 13241 factors, by section 13241's express terms, only applies "in establishing water quality objectives." Here the Regional Board is not establishing water quality objectives, but as required by section 303(d)(1)(C) of the Clean Water Act is adopting a TMDL that will implement the previously established objectives that have not been achieved. To the extent there is any conflict between Water Code section 13241, if it were applicable, and section 303(d)(1)(C) of the Clean Water Act, state law would yield to supreme federal law.
16. While the Regional Board is not required to consider the factors of Water Code section 13241, it, nonetheless, has developed and received significant information pertaining to the Water Code section 13241 factors and considered that information in developing and adopting this TMDL. The past, present, and probable future beneficial uses of water have been considered in that Marina del Rey Harbor is designated for a multitude of beneficial uses in the Basin Plan. Various living organisms (including vegetation, fish, invertebrates, and wildlife) are present in, transient through, and will be present in Marina del Rey Harbor. The environmental characteristics of Marina del Rey Harbor are spelled out at length in the Basin Plan and in the technical documents supporting this Basin Plan amendment, and have been considered in developing this TMDL. Water and sediment quality conditions that reasonably could be achieved through the coordinated control of all factors which affect water and sediment quality in the area have been considered via the discussion of likely means of compliance, and studies indicating that a mix of best management practices (BMPs), rather than advanced treatment plants, would achieve the TMDL. Authorizing certain storm water dischargers to rely on BMPs in the first instances reflects the reasonableness of the action in terms of the ability to implement the requirements, as well as a belief that the water and sediment quality conditions can reasonably be achieved in any

event. Establishing a plan that will ensure Marina del Rey Harbor sediments are not toxic is a reasonable water quality condition. However, to the extent that there would be any conflict between the consideration of the factor in Water Code section 13241 subdivision (c), if the consideration were required, and the Clean Water Act, the Clean Water Act would prevail. Notably, national policy established by Congress prohibits the discharge of toxic pollutants in toxic amounts. Economic considerations were considered throughout the development of the TMDL. Some of these economic considerations arise in the context of Public Resources Code section 21159 and are equally applicable here. The TMDL maps out a 10 to 15-year approach to implementing national policy prohibiting toxic pollutants in toxic amounts. This implementation program recognizes the economic limitations on achieving immediate compliance - especially for municipal storm water dischargers. The TMDL also authorizes the use of BMPs, to the extent authorized by law, for various storm water dischargers. Again, these recognize the economic limitations on certain storm water dischargers, while remaining faithful to the requirement to implement existing water quality standards and national policy. As part of this economic consideration, the Regional Board considered several studies pertaining to the cost of attaining water quality standards for storm water discharges. While section 13241 of the Water Code does not require a balancing of the costs and benefits, the Deviny et al. (2004) study concludes that any costs would be outweighed by the societal and economic benefits to Los Angeles' coastal economy. Again, these "economic considerations" were all considered and are reflected in an implementation program that is flexible and allows 10 to 15 years to comply with the final WLAs. The need for housing within the region has been considered, but this TMDL is unlikely to affect housing needs. Whatever housing impacts could materialize are ameliorated by the flexible nature of this TMDL and the 10 to 15-year implementation period. Finally, the TMDL is likely to facilitate the use of recycled water, as demonstrated by the City of Los Angeles' Integrated Resources Plan.

17. Pursuant to Public Resources Code section 21080.5, the Resources Agency has approved the Regional Water Boards' basin planning process as a "certified regulatory program" that adequately satisfies the California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.) requirements for preparing environmental documents. (14 Cal. Code Regs. § 15251(g); 23 Cal. Code Regs. § 3782.) As such, the Regional Water Board's basin planning documents together with an Environmental Checklist, are the "substitute documents" that contain the required environmental documentation under CEQA. (23 Cal Code Regs. § 3777.) The detailed technical report entitled "Total Maximum Daily Load for Toxic Pollutants in Marina del Rey Harbor," responses prepared by staff to address comments raised during the development of the TMDL, this resolution, and the Environmental Checklist serve as the substitute documents for this project. The project itself is the establishment of a TMDL for toxic pollutants in Marina del Rey Harbor. While the Regional Board has no discretion to not establish a TMDL (the TMDL is required by federal law) or for determining the water quality standard to be applied, the Board does exercise discretion in assigning waste load allocations and load allocations, determining the program of implementation, and setting various milestones in achieving the waste load allocations.
18. A CEQA Scoping hearing was conducted on May 6, 2003 at the Los Angeles Regional Water Quality Control Board, 320 W. 4th Street, Los Angeles, CA 90013. A notice of the CEQA Scoping hearing was sent to interested parties including cities and/or counties with jurisdiction in or bordering the Marina del Rey watershed.
19. The lengthy implementation period allowed by the TMDL will allow many compliance approaches to be pursued. In preparing the accompanying CEQA substitute documents, the

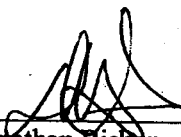
Regional Board has considered the requirements of Public Resources Code section 21159 and California Code of Regulations, title 14, section 15187, and intends the substitute documents to serve as a tier 1 environmental review. Nearly all of the compliance obligations will be undertaken by public agencies that will have their own obligations under CEQA. Project level impacts will need to be considered in any subsequent environmental analysis performed by other public agencies, pursuant to Public Resources Code section 21159.2. If not properly mitigated at the project level, there could be adverse environmental impacts. The substitute documents for this TMDL, and in particular the checklist and staff's responses to comments, identify broad mitigation approaches that should be considered at the project level. Consistent with CEQA, the substitute documents do not engage in speculation or conjecture and only consider the reasonably foreseeable environmental impacts of the methods of compliance, the reasonably foreseeable feasible mitigation measures, and the reasonably foreseeable alternative means of compliance, which would avoid or eliminate the identified impacts.

20. The proposed amendment could have a significant adverse effect on the environment. However, there are feasible alternatives, feasible mitigation measures, or both that would substantially lessen any significant adverse impact. The public agencies responsible for those parts of the project can and should incorporate such alternatives and mitigation into any subsequent projects or project approvals. Possible alternatives and mitigation are described in the CEQA substitute documents, specifically the TMDL technical report and the Environmental Checklist. To the extent the alternatives, mitigation measures, or both are not deemed feasible by those agencies, the necessity of implementing the federally required metals TMDL and removing the toxicity impairment from Marina del Rey Harbor (an action required to achieve the express, national policy of the Clean Water Act) outweigh the unavoidable adverse environmental effects.
21. The regulatory action meets the "Necessity" standard of the Administrative Procedures Act, Government Code, Section 11353, Subdivision (b). As specified above, federal regulations require that TMDLs be incorporated into the water quality management plan. The Regional Board's Basin Plan is the Regional Board's component of the water quality management plan, and the Basin Plan is how the Regional Board takes quasi-legislative, planning actions. Moreover, the TMDL is a program of implementation for existing water quality objectives, and is, therefore, appropriately a component of the Basin Plan under Water Code section 13242. The necessity of developing a TMDL is established in the TMDL staff report, the section 303(d) list, and the data contained in the administrative record documenting the toxicity impairments of Marina del Rey Harbor.
22. The Basin Plan amendment incorporating a TMDL for toxic pollutants in Marina del Rey Harbor must be submitted for review and approval by the State Water Resources Control Board (State Board), the State Office of Administrative Law (OAL), and the USEPA. The Basin Plan amendment will become effective upon approval by USEPA. A Notice of Decision will be filed with the Resources Agency.

THEREFORE, be it resolved that pursuant to sections 13240 and 13242 of the Water Code, the Regional Board hereby amends the Basin Plan as follows:

1. Pursuant to Sections 13240 and 13242 of the California Water Code, the Regional Board, after considering the entire record, including oral testimony at the hearing, hereby adopts the amendments to Chapter 7 of the Water Quality Control Plan for the Los Angeles Region, as set forth in Attachment A hereto, to incorporate the elements of the Marina del Rey Toxic Pollutants TMDL.
2. The Executive Officer is directed to forward copies of the Basin Plan amendment to the State Board in accordance with the requirements of section 13245 of the California Water Code.
3. The Regional Board requests that the State Board approve the Basin Plan amendment in accordance with the requirements of sections 13245 and 13246 of the California Water Code and forward it to OAL and the USEPA.
4. If during its approval process Regional Board staff, the State Board or OAL determines that minor, non-substantive corrections to the language of the amendment are needed for clarity or consistency, the Executive Officer may make such changes, and shall inform the Board of any such changes.
5. The Executive Officer is authorized to sign a Certificate of Fee Exemption.

I, Jonathan Bishop, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on October 6, 2005.


Jonathan Bishop
Executive Officer

Chief Deputy E.O.
for

11-14-05
Date

Attachment A to Resolution No. 2005-012

Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the Marina del Rey Harbor Toxic Pollutants TMDL

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on October 6, 2005.

Amendments:

Table of Contents

Add:

Chapter 7. Total Maximum Daily Loads (TMDLs) Summaries
7-18 Marina del Rey Harbor Toxic Pollutants TMDL

List of Tables, Figures and Inserts

Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)

Tables

7.18 Marina del Rey Harbor Toxic Pollutants TMDL

7.18.1 Marina del Rey Harbor Toxic Pollutants TMDL: Elements

7.18.2 Marina del Rey Harbor Toxic Pollutants TMDL: Implementation Schedule

Chapter 7. Total Maximum Daily Loads (TMDLs) Summaries, Section 7-18 (Marina del Rey Harbor Toxic Pollutants TMDL)

This TMDL was adopted by the Regional Water Quality Control Board on October 6, 2005.

This TMDL was approved by:

The State Water Resources Control Board on [Insert Date].

The Office of Administrative Law on [Insert Date].

The U.S. Environmental Protection Agency on [Insert Date].

The following tables include the elements of this TMDL.

Attachment A to Resolution No. 2005-012

Table 7-18.1. Marina del Rey Harbor Toxic Pollutants TMDL: Elements

Element	Key Findings and Regulatory Provisions															
<i>Problem Statement</i>	<p>The back basins of Marina del Rey Harbor are on the Clean Water Act Section 303(d) list of impaired waterbodies for chlordane, copper, lead, zinc, PCBs, DDT, dieldrin, sediment toxicity and a fish consumption advisory. Review of available data during the development of this TMDL indicated that dieldrin and DDT are no longer causes of impairment. The following designated beneficial uses are impaired by these toxic pollutants: water contact recreation (REC1); marine habitat (MAR); wildlife habitat (WILD); commercial and sport fishing (COMM); and shellfish harvesting (SHELL).</p>															
<i>Numeric Target</i> <i>(Interpretation of the narrative and numeric water quality objective, used to calculate the allocations)</i>	<p>Numeric targets for the harbor sediments are based on the sediment quality guidelines compiled by the National Oceanic and Atmospheric Administration, which are used in evaluating waterbodies within the Los Angeles Region for development of the 303(d) list. The Effects Range-Low (ERLs) guidelines are established as the numeric targets for sediments in Marina del Rey Harbor.</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Numeric Targets for Metals in Sediment (mg/kg)</th> </tr> <tr> <th style="text-align: center; border-bottom: 1px solid black;">Copper</th> <th style="text-align: center; border-bottom: 1px solid black;">Lead</th> <th style="text-align: center; border-bottom: 1px solid black;">Zinc</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">34</td> <td style="text-align: center;">46.7</td> <td style="text-align: center;">150</td> </tr> </tbody> </table> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Numeric Targets for Organic Compounds in Sediment (µg/kg)</th> </tr> <tr> <th style="text-align: center; border-bottom: 1px solid black;">Chlordane</th> <th style="text-align: center; border-bottom: 1px solid black;">Total PCBs</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0.5</td> <td style="text-align: center;">22.7</td> </tr> </tbody> </table> <p>In addition to the sediment numeric target, water column and fish tissue targets are set for the PCB impairment in fish tissue.</p> <p>The California Toxics Rule (CTR) Criterion for the protection of human health from the consumption of aquatic organisms is selected as the final numeric target for total PCBs in the water column. However, given the inability of current analytical methods to detect concentrations at this low level, an interim numeric target will be applied. The CTR Chronic Criterion for the protection of aquatic life in saltwater is selected as the interim numeric target for the fish tissue impairment by PCBs. This numeric target will remain in effect until advances in technology allow for analysis of PCBs at lower detection limits.</p> <p>Interim Target for total PCBs in the Water Column: 0.03µg/L Final Target for total PCBs in the Water Column: 0.00017 µg/L</p> <p>The numeric Target for PCBs in fish tissue is the Threshold Tissue Residue Level that is derived from CTR human health criteria, which are adopted criteria for water designated to protect humans from consumption of contaminated fish or other aquatic organisms.</p> <p>Numeric Target for total PCBs in Fish Tissue: 5.3 µg/Kg</p>	Numeric Targets for Metals in Sediment (mg/kg)			Copper	Lead	Zinc	34	46.7	150	Numeric Targets for Organic Compounds in Sediment (µg/kg)		Chlordane	Total PCBs	0.5	22.7
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Attachment A to Resolution No. 2005-012

Element	Key Findings and Regulatory Provisions															
<i>Source Analysis</i>	<p>Urban storm water has been recognized as a substantial source of metals. Numerous researchers have documented that the most prevalent metals in urban storm water (i.e., copper, lead, and zinc) are consistently associated with suspended solids. Because metals are typically associated with fine particles in storm water runoff, they have the potential to accumulate in marine sediments where they may pose a risk of toxicity. Similar to metals, the majority of organic constituents in storm water are associated with particulates.</p> <p>Passive leaching of copper-based anti-fouling paints is a potential source of copper loading to the sediment. However, there is insufficient information available to quantify the contribution of boat discharges to the sediment pollutant load. This TMDL requires a study designed to estimate copper partitioning between the water column and sediment in Marina del Rey harbor, in order to determine the impact of passive leaching on the marine sediment.</p> <p>Direct deposition of airborne particles to the water surface may be responsible for contributing copper, lead and zinc to the Marina del Rey back basins. The estimated contribution from this source is minor. Indirect atmospheric deposition reflects the process by which metals deposited on the land surface may be washed off during storm events and delivered to Marina del Rey Harbor. The loading of metals associated with indirect atmospheric deposition are accounted for in the storm water runoff.</p>															
<i>Loading Capacity</i>	<p>TMDLs are developed for copper, lead, zinc, chlordanes, and PCBs within the sediments of Marina del Rey Harbor's back basins.</p> <p>The loading capacity for Marina del Rey Harbor is calculated by multiplying the numeric targets by the average annual total suspended solids (TSS) loading to the harbor sediment. The average annual TSS discharged to the back basins of the harbor is 64,166 kilograms per year (kg/yr). The TMDL is set equal to the loading capacity.</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;"><u>Metals Loading Capacity (kilograms/year)</u></th> </tr> <tr> <th style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Copper</th> <th style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Lead</th> <th style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Zinc</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2.18</td> <td style="text-align: center;">3.0</td> <td style="text-align: center;">9.6</td> </tr> </tbody> </table> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;"><u>Organics Loading Capacity (grams/year)</u></th> </tr> <tr> <th style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Chlordane</th> <th style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Total PCBs</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0.03</td> <td style="text-align: center;">1.46</td> </tr> </tbody> </table>	<u>Metals Loading Capacity (kilograms/year)</u>			Copper	Lead	Zinc	2.18	3.0	9.6	<u>Organics Loading Capacity (grams/year)</u>		Chlordane	Total PCBs	0.03	1.46
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<i>Load Allocations (for nonpoint sources)</i>	<p>Load allocations (LA) are assigned to nonpoint sources Marina del Rey Harbor. Load allocations are developed for open space and direct atmospheric deposition.</p> <p>The mass-based load allocation for direct atmospheric deposition is equal to the percentage of the watershed covered by water (5.4%) multiplied by the total loading capacity.</p>															

Attachment A to Resolution No. 2005-012

Element	Key Findings and Regulatory Provisions																																													
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<p><i>Waste Load Allocations (for point sources)</i></p>	<p>Waste load allocations (WLA) are assigned to point sources for the Marina del Rey watershed. A grouped mass-based waste load allocation is developed for the storm water permittees (Los Angeles County MS4, Caltrans, General Construction and General Industrial) by subtracting the load allocations from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed.</p> <p align="center"><u>Metals Waste Load Allocations for Storm Water (kg/yr)</u></p> <table border="1"> <thead> <tr> <th>Copper</th> <th>Lead</th> <th>Zinc</th> </tr> </thead> <tbody> <tr> <td align="center">2.06</td> <td align="center">2.83</td> <td align="center">9.11</td> </tr> </tbody> </table> <p align="center"><u>Organics Waste Load Allocations for Storm Water (g/yr)</u></p> <table border="1"> <thead> <tr> <th>Chlordane</th> <th>Total PCBs</th> </tr> </thead> <tbody> <tr> <td align="center">0.03</td> <td align="center">1.38</td> </tr> </tbody> </table> <p>The storm water waste load allocations are apportioned between the MS4 permittees, Caltrans, the general construction and the general industrial storm water permits based on an areal weighting approach.</p> <p align="center"><u>Metals Storm Water WLAs Apportioned between Permits (kg/yr)</u></p> <table border="1"> <thead> <tr> <th></th> <th>Copper</th> <th>Lead</th> <th>Zinc</th> </tr> </thead> <tbody> <tr> <td>MS4 Permittees</td> <td align="center">2.01</td> <td align="center">2.75</td> <td align="center">8.85</td> </tr> <tr> <td>Caltrans</td> <td align="center">0.022</td> <td align="center">0.03</td> <td align="center">0.096</td> </tr> <tr> <td>General Construction</td> <td align="center">0.033</td> <td align="center">0.045</td> <td align="center">0.144</td> </tr> <tr> <td>General Industrial</td> <td align="center">0.004</td> <td align="center">0.006</td> <td align="center">0.018</td> </tr> </tbody> </table> <p align="center"><u>Organics Storm Water WLAs Apportioned between Permits (g/yr)</u></p> <table border="1"> <thead> <tr> <th></th> <th>Chlordane</th> <th>Total PCBs</th> </tr> </thead> <tbody> <tr> <td>MS4 Permittees</td> <td align="center">0.0295</td> <td align="center">1.34</td> </tr> <tr> <td>Caltrans</td> <td align="center">0.0003</td> <td align="center">0.015</td> </tr> <tr> <td>General Construction</td> <td align="center">0.0005</td> <td align="center">0.022</td> </tr> <tr> <td>General Industrial</td> <td align="center">0.0001</td> <td align="center">0.003</td> </tr> </tbody> </table> <p>Each storm water permittee enrolled under the general construction or industrial storm water permits will receive an individual waste load allocation on a per acre basis, based on the acreage of their facility.</p>	Copper	Lead	Zinc	2.06	2.83	9.11	Chlordane	Total PCBs	0.03	1.38		Copper	Lead	Zinc	MS4 Permittees	2.01	2.75	8.85	Caltrans	0.022	0.03	0.096	General Construction	0.033	0.045	0.144	General Industrial	0.004	0.006	0.018		Chlordane	Total PCBs	MS4 Permittees	0.0295	1.34	Caltrans	0.0003	0.015	General Construction	0.0005	0.022	General Industrial	0.0001	0.003
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MS4 Permittees	2.01	2.75	8.85																																											
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General Construction	0.033	0.045	0.144																																											
General Industrial	0.004	0.006	0.018																																											
	Chlordane	Total PCBs																																												
MS4 Permittees	0.0295	1.34																																												
Caltrans	0.0003	0.015																																												
General Construction	0.0005	0.022																																												
General Industrial	0.0001	0.003																																												

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Element	Key Findings and Regulatory Provisions																				
	<p style="text-align: center;">Metals per Acre WLAs for Individual General Construction or Industrial Storm Water Permittees (g/yr/ac)</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px 10px;">Copper</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px 10px;">Lead</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px 10px;">Zinc</td> </tr> <tr> <td style="text-align: center; padding: 2px 10px;">2.3</td> <td style="text-align: center; padding: 2px 10px;">3.1</td> <td style="text-align: center; padding: 2px 10px;">10</td> </tr> </table> <p style="text-align: center;">Organics per acre WLAs for Individual General Construction or Industrial Storm Water Permittees (mg/yr/ac)</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px 10px;">Chlordane</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px 10px;">Total PCBs</td> </tr> <tr> <td style="text-align: center; padding: 2px 10px;">0.03</td> <td style="text-align: center; padding: 2px 10px;">1.5</td> </tr> </table> <p>Concentration-based waste load allocations are assigned to the minor NPDES permits and general non-storm water NPDES permits that discharge to Marina del Rey Harbor. Any future minor NPDES permits or enrollees under a general non-storm water NPDES permit will also be subject to the concentration-based waste load allocations.</p> <p style="text-align: center;">Metals Concentration-based Waste Load Allocations (mg/kg)</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px 10px;">Copper</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px 10px;">Lead</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px 10px;">Zinc</td> </tr> <tr> <td style="text-align: center; padding: 2px 10px;">34</td> <td style="text-align: center; padding: 2px 10px;">46.7</td> <td style="text-align: center; padding: 2px 10px;">150</td> </tr> </table> <p style="text-align: center;">Organic Concentration-based Waste Load Allocations (µg/kg)</p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px 10px;">Chlordane</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; padding: 2px 10px;">Total PCBs</td> </tr> <tr> <td style="text-align: center; padding: 2px 10px;">0.5</td> <td style="text-align: center; padding: 2px 10px;">22.7</td> </tr> </table>	Copper	Lead	Zinc	2.3	3.1	10	Chlordane	Total PCBs	0.03	1.5	Copper	Lead	Zinc	34	46.7	150	Chlordane	Total PCBs	0.5	22.7
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0.5	22.7																				
Margin of Safety	An implicit margin of safety is applied through the use of the more protective sediment quality guideline values. The ERLs were selected over the higher ERM as the numeric targets.																				
Implementation	<p>The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the State of California Department of Transportation (Caltrans) Storm Water Permit, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in sections 13263 and 13269 of the Water Code, in conformance with the State Water Resources Control Board's Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement.</p> <p>The Regional Board shall reconsider this TMDL in six years after the effective date of the TMDL based on additional data obtained from special studies. Table 7-14.2 presents the implementation schedule for the responsible permittees.</p> <p>Minor NPDES Permits and General Non-Storm Water NPDES Permits:</p>																				

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Element	Key Findings and Regulatory Provisions
	<p>The concentration-based waste load allocations for the minor NPDES permits and general non-storm water NPDES permits will be implemented through NPDES permit limits. Permit writers may translate applicable waste load allocations into effluent limits for the minor and general NPDES permits by applying applicable engineering practices authorized under federal regulations. The minor and existing general non-storm water NPDES permittees are allowed up to seven years from the effective date of the TMDL to achieve the waste load allocations.</p> <p>General Industrial Storm Water Permit:</p> <p>The Regional Board will develop a watershed specific general industrial storm water permit to incorporate waste load allocations. Concentration-based permit limits may be set to achieve the mass-based waste load allocations. These concentration-based limits would be equal to the concentration-based waste load allocations assigned to the other NPDES permits. It is expected that permit writers will translate the waste load allocations into BMPs, based on BMP performance data. However, the permit writers must provide adequate justification and documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations. The general industrial storm water permittees are allowed up to seven years from the effective date of the TMDL to achieve the waste load allocations.</p> <p>General Construction Storm Water Permit:</p> <p>Waste load allocations will be incorporated into the State Board general permit upon renewal or into a watershed specific general construction storm water permit developed by the Regional Board.</p> <p>Within seven years of the effective date of the TMDL, the construction industry will submit the results of BMP effectiveness studies to determine BMPs that will achieve compliance with the waste load allocations assigned to construction storm water permittees. Regional Board staff will bring the recommended BMPs before the Regional Board for consideration within eight years of the effective date of the TMDL. General construction storm water permittees will be considered in compliance with waste load allocations if they implement these Regional Board approved BMPs.</p> <p>All general construction permittees must implement the approved BMPs within nine years of the effective date of the TMDL. If no effectiveness studies are conducted and no BMPs are approved by the Regional Board within eight years of the effective date of the TMDL, each general construction storm water permit holder will be subject to site-specific BMPs and monitoring requirements to demonstrate compliance with waste load allocations.</p> <p>MS4 and Caltrans Storm Water Permits:</p> <p>The County of Los Angeles, City of Los Angeles, and Culver City are</p>

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Element	Key Findings and Regulatory Provisions
	<p>jointly responsible for meeting the mass-based waste load allocations for the MS4 permittees. Caltrans is responsible for meeting their mass-based waste load allocations, however, they may choose to work with the MS4 permittees. The primary jurisdiction for the Marina del Rey Harbor watershed is the County of Los Angeles.</p> <p>Each municipality and permittee will be required to meet the waste load allocations at the designated TMDL effectiveness monitoring points. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the numeric waste load allocations. We expect that reductions to be achieved by each BMP will be documented and that sufficient monitoring will be put in place to verify that the desired reductions are achieved. The permits should also provide a mechanism to adjust the required BMPs as necessary to ensure their adequate performance.</p> <p>The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach, with compliance to be achieved in prescribed percentages of the watershed, with total compliance to be achieved within 10 years. However, the Regional Board may extend the implementation period up to 15 years if an integrated water resources approach is employed.</p> <p>The waste load allocations and load allocations have been developed to achieve the numeric targets in the back basins of Marina del Rey Harbor by the end of the compliance period. However, the Regional Board is aware of toxic pollutants bound up in sediment. To the extent that the Regional Board or another responsible jurisdiction or agency determines that toxic pollutants bound in sediments are still preventing the attainment of numeric targets, the Regional Board will issue appropriate investigatory orders or cleanup and abatement orders to achieve attainment of the numeric targets.</p>
<i>Seasonal Variations and Critical Conditions</i>	<p>There is a high degree of inter- and intra-annual variability in total suspended solids discharged to Marina del Rey Harbor. This is a function of the storms, which are highly variable between years. The TMDL is based on a TSS load derived from long-term average rainfall over a 52-year period from 1948 to 2000. This time period contains a wide range of storm conditions and drain discharges to Marina del Rey Harbor. Use of the average condition for the TMDL is appropriate because issues of sediment effects on benthic communities and potential for bioaccumulation to higher trophic levels occurs over long time periods.</p>
<i>Monitoring</i>	<p>Effective monitoring will be required to assess the condition of Marina del Rey Harbor and to assess the on-going effectiveness of efforts by dischargers to reduce toxic pollutants loading from the Marina del Rey Watershed. Special studies may also be appropriate to provide further</p>

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Element	Key Findings and Regulatory Provisions
	<p>information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies that shall be developed in a coordinated manner. The programs, reports, and studies will be developed in response to subsequent orders issued by the Executive Officer.</p> <p>Ambient Component</p> <p>A monitoring program is necessary to assess water quality throughout Marina del Rey Harbor and to assess fish tissue and sediment quality in the harbor's back basins. Data on background water quality for copper will help refine the numeric targets and waste load allocations and assist in the effective placement of BMPs. In addition, fish tissue data is required in Marina del Rey's back basins to confirm continued impairment.</p> <p>Water quality samples shall be collected monthly and analyzed for chlordane and total PCBs at detection limits that are at or below the minimum levels until the TMDL is reconsidered in the sixth year. The minimum levels are those published by the State Water Resources Control Board in Appendix 4 of the Policy for the Implementation of Toxic Standards for Inland Surface Water, Enclosed Bays, and Estuaries of California, March 2, 2000. Special emphasis should be placed on achieving detection limits that will allow evaluation relative to the CTR standards. If these can not be achieved with conventional techniques, then a special study should be proposed to evaluate concentrations of organics.</p> <p>Water quality samples shall also be collected monthly and analyzed for copper, lead, and zinc until the TMDL is reconsidered in the sixth year. For metals water column analysis, methods that allow for (1) the removal of salt matrix to reduce interference and avoid inaccurate results prior to the analysis; and (2) the use of trace metal clean sampling techniques, should be applied. Examples of such methods include EPA Method 1669 for sample collection and handling, and EPA Method 1640 for sample preparation and analysis.</p> <p>Storm water monitoring shall be conducted for metals (copper, lead, and zinc) and organics (chlordane and total PCBs) to provide assessment of water quality during wet-weather conditions and loading estimates from the watershed to the harbor. Special emphasis should be placed on achieving lower detection limits for organochlorine compounds.</p> <p>The MS4 and Caltrans storm water permittees are jointly responsible for conducting bioaccumulation testing of fish and mussel tissue within the Harbor. The permittees are required to submit for approval of the Executive Officer a monitoring plan that will provide the data needed to confirm the 303(d) listing or de-listing, as applicable.</p> <p>Representative sediment sampling shall be conducted quarterly within</p>

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Element	Key Findings and Regulatory Provisions
	<p>the back basins of the harbor for copper, lead, zinc, chlordane, and total PCBs at detection limits that are lower than the ERLs. Sediment samples shall also be analyzed for total organic carbon, grain size and sediment toxicity.</p> <p>Initial sediment toxicity monitoring should be conducted quarterly in the first year of the TMDL to define the baseline and semi-annually, thereafter, to evaluate effectiveness of the BMPs until the TMDL is reconsidered in the sixth year. The sediment toxicity testing shall include testing of multiple species, a minimum of three, for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day and 10-day amphipod mortality test; the sea urchin fertilization testing of sediment pore water; and the bivalve embryo testing of the sediment/water interface. The chronic 28-day and shorter-term 10-day amphipod tests may be conducted in the initial year of quarterly testing and the results compared. If there is no significant difference in the tests, then the less expensive 10-day test can be used throughout the rest of the monitoring, with some periodic 28-day testing.</p> <p>Effectiveness Component</p> <p>The water quality samples collected during wet weather shall be analyzed for total dissolved solids, settleable solids and total suspended solids if not already part of the sampling program. Sampling shall be designed to collect sufficient volumes of settleable and suspended solids to allow for analysis of copper, lead, zinc, chlordane, total PCBs, and total organic carbon in the sediment.</p> <p>Monthly representative sediment sampling shall be conducted at existing monitoring locations throughout the harbor, and analyzed for copper, lead, zinc, chlordane, and total PCBs at detection limits that are lower than the ERLs. The, sediment samples shall also be analyzed for total organic carbon and grain size. Sediment toxicity testing shall be conducted semi-annually, and shall include testing of multiple species (a minimum of three) for lethal and non-lethal endpoints. Toxicity testing may include: the 28-day or 10-day amphipod mortality test; the sea urchin fertilization testing of sediment pore water; and the bivalve embryo testing of the sediment/water interface.</p> <p>Toxicity shall be indicated by an amphipod survival rate of 70% or less in a single test, in conjunction with a statistically significant decrease in amphipod survival relative to control organisms (significance determined by T-test, $\alpha=0.05$). Accelerated monitoring maybe conducted to confirm toxicity at stations identified as toxic. Accelerated monitoring shall consist of six additional tests, approximately every two weeks, over a 12-week period. If the results of any two of the six accelerated tests are less than 90% survival, then the MS4 and Caltrans permittees shall conduct a Toxicity Identification Evaluation (TIE). Alternatively, responsible parties have the option of foregoing accelerated toxicity testing and conducting a TIE directly following an indication of toxicity. The TIE shall include reasonable steps to</p>

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Element	Key Findings and Regulatory Provisions
	<p>identify the sources of toxicity and steps to reduce the toxicity The Phase I TIE shall include the following treatments and corresponding blanks: baseline toxicity; particle removal by centrifugation; solid phase extraction of the centrifuged sample using C8, C18, or another media; complexation of metals using ethylenediaminetetraacetic acid (EDTA) addition to the raw sample; neutralization of oxidants/metals using sodium thiosulfate addition to the raw sample; and inhibition of organo-phosphate (OP) pesticide activation using piperonyl butoxide addition to the raw sample (crustacean toxicity tests only).</p> <p>Bioaccumulation monitoring of fish and mussel tissue within the Harbor shall be conducted annually. The permittees are required to submit for approval of the Executive Officer a monitoring plan that will provide the data needed to assess the effectiveness of the TMDL. The general industrial storm water permit shall contain a model monitoring and reporting program to evaluate BMP effectiveness. A permittee enrolled under the general industrial permit shall have the choice of conducting individual monitoring based on the model program or participating in a group monitoring effort. MS4 permittees are encouraged to take the lead in group monitoring efforts for industrial facilities within their jurisdiction because compliance with waste load allocations by these facilities will in many cases translate to reductions in contaminate loads to the MS4 system.</p> <p>Special Studies</p> <p>Special studies are necessary to refine source assessments, to provide better estimates of loading capacity, and to optimize implementation efforts. The Regional Board will re-consider the TMDL in the sixth year after the effective date in light of the findings of these studies.</p> <p>Studies required for this TMDL include:</p> <ul style="list-style-type: none"> • Evaluate partitioning coefficients between water column and sediment to assess the contribution of water column discharges to sediment concentrations in the harbor, and • Evaluate the use of low detection level techniques to determine water quality concentrations for those contaminants where standard detection limits cannot be used to assess compliance for CTR standards or are not sufficient for estimating source loadings from tributaries and storm water. <p>Studies recommended for this TMDL include:</p> <ul style="list-style-type: none"> • Develop and implement a monitoring program to collect the data necessary to apply a multiple lines of evidence approach; • Refine the relationship between pollutants and suspended solids aimed at better understanding of the delivery of pollutants to the watershed, and • Evaluate the effectiveness of BMPs to address pollutants and/or sediments.

Attachment A to Resolution No. 2005-012

Table 7-18.2. Marina del Rey Harbor Toxic Pollutants TMDL: Implementation Schedule

Date	Action
Effective date of the TMDL	Regional Board permit writers shall incorporate the waste load allocations for sediment into the NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance, renewal or re-opener.
On-going	The Executive Officer shall promptly issue appropriate investigatory and clean up and abatement orders to address any toxicity hotspots within sediments identified as a result of data submitted pursuant to this TMDL, any U.S. Army Corps of Engineer dredging activity, or any other investigation.
Within 6 months after the effective date of the State Board adopted sediment quality objectives and implementation policy	The Regional Board will re-assess the numeric targets and waste load allocations for consistency with the State Board adopted sediment quality objectives.
5 years after effective date of the TMDL	Responsible jurisdictions and agencies shall provide to the Regional Board result of any special studies.
6 years after effective date of the TMDL	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
MINOR NPDES PERMITS AND GENERAL NON-STORM WATER NPDES PERMITS	
7 years after effective date of the TMDL	The non-storm water NPDES permits shall achieve the concentration-based waste load allocations for sediment per provisions allowed for in NPDES permits.
GENERAL INDUSTRIAL STORM WATER PERMIT	
7 years after effective date of the TMDL	The general industrial storm water permits shall achieve the mass-based waste load allocations for sediment per provisions allowed for in NPDES permits. Permits shall allow an iterative BMP process including BMP effectiveness monitoring to achieve compliance with permit requirements.
GENERAL CONSTRUCTION STORM WATER PERMIT	
7 years from the effective date of the TMDL	The construction industry will submit the results of the BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.

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Date	Action
8 years from the effective date of the TMDL	The Regional Board will consider results of the BMP effectiveness studies and consider approval of BMPs no later than eight years from the effective date of the TMDL.
9 years from the effective date of the TMDL	All general construction storm water permittees shall implement Regional Board-approved BMPs.
MS4 AND CALTRANS STORM WATER PERMITS	
12 months after the effective date of the TMDL	In response to an order issued by the Executive Officer, the MS4 and Caltrans storm water NPDES permittees must submit a coordinated monitoring plan, to be approved by the Executive Officer, which includes both ambient monitoring and TMDL effectiveness monitoring. Once the coordinated monitoring plan is approved by the Executive Officer, monitoring shall commence within 6 months. The draft monitoring report shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days.
5 years after effective date of TMDL (Draft Report) 5 ½ years after effective date of TMDL (Final Report)	The MS4 and Caltrans storm water NPDES permittees shall provide a written report to the Regional Board outlining how they will achieve the waste load allocations for sediment to Marina del Rey Harbor. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan. The draft report shall be made available for public comment and the Executive Officer shall accept public comments for at least 30 days.
Schedule for MS4 and Caltrans Permittees if Pursuing a TMDL Specific Implementation Plan	
8 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
10 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
Schedule for MS4 and Caltrans Permittees if Pursuing an Integrated Resources Approach, per Regional Board Approval	
7 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 25% of the total drainage area served by the MS4 system is effectively meeting the waste load allocations for sediment.
9 years after effective date of the TMDL	The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4



APPENDIX B

Marina del Rey Harbor Mother's Beach and Back Basins Bacteria TMDL

State of California
California Regional Water Quality Control Board, Los Angeles Region

RESOLUTION NO. 2006-009
April 6, 2006

Statement of support for the efforts of responsible jurisdictions and agencies in the Marina del Rey Watershed to utilize an integrated water resources approach to achieve full compliance with the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL in the shortest possible timeframe and no later than 2021

WHEREAS, the California Regional Water Quality Control Board, Los Angeles Region, finds that:

1. The federal Clean Water Act (CWA) requires the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) to develop water quality standards, which include beneficial use designations and criteria to protect beneficial uses for each water body found within its region.
2. The Regional Board carries out its CWA responsibilities through California's Porter-Cologne Water Quality Control Act and establishes water quality objectives designed to protect beneficial uses contained in the Water Quality Control Plan for the Los Angeles Region (Basin Plan).
3. Section 303(d) of the CWA requires states to identify and to prepare a list of water bodies that do not meet water quality standards and then to establish load and waste load allocations, or a total maximum daily load (TMDL), for each water body that will ensure attainment of water quality standards and then to incorporate those allocations into their water quality control plans.
4. Marina del Rey Harbor (MdrH) Mothers' Beach and Back Basins were listed on California's 1998 section 303(d) List, due to impairments for coliform or for beach closures associated with bacteria generally. Mothers' beach and back basins of MdrH appeared on the 303(d) List because the elevated bacteria and beach closures prevented full support of the beaches' designated use for water contact recreation (REC-1).
5. A consent decree between the U.S. Environmental Protection Agency (USEPA), Heal the Bay, Inc. and Santa Monica BayKeeper, Inc. was approved on March 22, 1999. This court order required completion of a TMDL to reduce bacteria at Marina del Rey Harbor Mothers' Beach and back basins by March 2004.
6. The Regional Board adopted a TMDL to address bacteriological water quality impairments for Mothers' Beach and back basins of MdrH located in Los Angeles County, California. The Regional Board adopted a TMDL to address water quality impairments during dry and wet weather on August 7, 2003 (Resolution 2003-012).
7. The Regional Board incorporated the TMDL along with appropriate implementation measures into its Basin Plan as required (40 CFR 130.6(c)(1), 130.7). The Basin Plan and applicable statewide plans serve as the State Water Quality Management Plans governing the watersheds under the jurisdiction of the Regional Board.

As Adopted on April 6, 2006

8. The Regional Board established the above-mentioned TMDL to preserve and enhance the water quality at Santa Monica Bay (SMB) including MdrH and for the benefit of the 55 million beachgoers, on average, that visit the Santa Monica Bay beaches each year. At stake is the health of swimmers and surfers and associated health costs as well as sizeable revenues to the local and state economy. Estimates are that visitors to Santa Monica Bay beaches spend approximately \$1.7 billion annually.
9. The Regional Board's goal in establishing the above-mentioned TMDLs is to reduce the risk of illness associated with swimming in marine waters contaminated with bacteria. Local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects, such as gastroenteritis and upper respiratory illness, and recreational water quality, as measured by bacteria indicator densities. The water quality objectives on which the TMDL numeric targets are based will ensure that the risk of illness to the public from swimming at MdrH Mothers' Beach generally will be no greater than 19 illnesses per 1,000 swimmers, which is defined by the USEPA as an "acceptable health risk" in marine recreational waters.
10. The County of Los Angeles, Cities of Los Angeles and Culver City and California Department of Transportation (Caltrans) are the responsible jurisdictions and agencies for the Marina del Rey Watershed. The County of Los Angeles is the primary jurisdiction since they own and operate MdrH. The primary jurisdiction is responsible for submitting an implementation plan per the requirements of the TMDL.
11. During the adoption of the TMDL, the Regional Board recognized two broad approaches to implementing the TMDL. One possible approach is an integrated water resources approach that takes a holistic view of regional water resources management by integrating planning for future wastewater, storm water, recycled water, and potable water needs and systems; focuses on beneficial re-use of storm water, including groundwater infiltration, at multiple points throughout a watershed; and addresses multiple pollutants for which Marina del Rey Harbor or its watershed are listed on the CWA section 303(d) List as impaired. The other possible approach is a non-integrated water resources approach in which implementation is achieved by focusing on narrowly tailored, end-of-the-pipe solutions to improve bacteriological water quality without incorporating other environmental and public goals.
12. The Regional Board recognized that an integrated water resources approach not only provides water quality benefits to the people of the Los Angeles Region, but also that the responsible jurisdictions implementing this TMDL can serve a variety of public purposes by adopting an integrated water resources approach. An integrated water resources approach will address multiple pollutants, and as a result, responsible jurisdictions can recognize cost-savings because capital expenses for the integrated approach will implement several TMDLs that address pollutants in storm water. In addition, jurisdictions serve multiple roles for their citizenry, and an integrated approach allows for the incorporation and enhancement of other public goals such as water supply, recycling and storage; environmental justice; parks, greenways and open space; and active and passive recreational and environmental education opportunities.
13. The Regional Board acknowledged that a longer timeframe is reasonable for an integrated water resources approach because it requires more complicated planning and implementation such as identifying markets for the water and efficiently siting storage and transmission infrastructure within the watershed to realize the multiple benefits of such an approach.

Therefore, after considering testimony, the Regional Board revised the implementation provisions of the TMDL to allow for a longer implementation schedule (*up to 18 years*) if the responsible jurisdictions and agencies clearly demonstrate their intention to undertake an integrated water resources approach and justify the need for a longer implementation schedule. In contrast, the Regional Board required a shorter implementation schedule (*up to 10 years*) for non-integrated approaches because the level of planning is not as complicated.

14. The Regional Board has the authority to authorize compliance schedules through the basin planning process. In the TMDL, adopted by the Regional Board, the Regional Board established dual schedules for implementation that afford the responsible jurisdictions and agencies up to ten or eighteen years, depending on the implementation approaches pursued, to implement the TMDL.
15. The implementation provisions in Table 7-5.1 of the TMDL state that, "Within ten years of the effective date of the TMDL, compliance with the allowable number of wet-weather exceedance days and rolling 30-day geometric mean targets must be achieved, unless an Integrated Water Resources Approach is implemented (in which case compliance must be achieved in the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria TMDL)" (Resolution 2003-012, Attachment A).
16. The final implementation schedule for the TMDL will be determined on the basis of the implementation plan. If the responsible jurisdictions and agencies prefer an integrated approach, the implementation plan must clearly demonstrate the need for the longer implementation schedule. Otherwise, at most a 10-year implementation timeframe will be allotted by the Regional Board, depending upon a clear demonstration of the time needed in the implementation plan.
17. Per the requirements set forth in the TMDL, responsible jurisdictions and agencies submitted a draft Implementation Plan to the Regional Board on March 30, 2005. Regional Board staff met with the responsible jurisdictions and agencies on May 9, 2005 to review and provide comments on the draft Implementation Plan. Regional Board staff also provided written comments to the responsible jurisdictions and agencies in a letter dated August 5, 2005. The responsible jurisdictions and agencies submitted a final Implementation Plan to the Regional Board on October 31, 2005.
18. The Implementation Plan submitted lays out a four-phase, iterative-adaptive program in which the responsible jurisdictions and agencies have made explicit commitments in the early stages of implementation to conduct focused public information and participation program, institutional and source control activities as well as specific structural best management practices (BMPs) at publicly-owned facilities.
19. The Implementation Plan incorporates the principles of an integrated water resources approach by implementing subregional solutions that integrate planning for future wastewater, storm water, recycled water and potable water needs and systems; address multiple pollutants; focus on beneficial re-use of stormwater; and incorporate other public goals.
20. The implementation schedule is phased over 16 years with a final compliance date of 2021 (18 years after the effective date of the SMB Beaches Bacteria Wet Weather TMDL). The Implementation Plan is divided into four phases. The first phase extends from July 2005 to June 2007; the second phase extends from July 2007 to June 2012; the third phase extends

from July 2012 to June 2017; and the fourth phase extends from July 2017 to final compliance in July 2021. Phase one and two emphasizes public information and participation programs and institutional and source control programs (nonstructural) and subregional runoff management solutions (structural) to reduce the contribution of bacteria and other pollutants of concern from storm water runoff. The phase one and two programs and projects focus on discharges of non-storm water and storm water directly into the back basins (Basins D, E, and F), that contribute to the greatest risk of exceedances of bacterial objectives. The third and fourth phases emphasizes refinement of institutional and subregional structural solutions based on performance evaluations conducted during Phases I and II. Feasibility analysis of regional control strategy will be initiated in Phase I.

21. The responsible jurisdictions and agencies have committed to implement two subregional structural projects by 2010 and to evaluate five additional projects by 2021. These seven projects along with commitments to implement 13 aggressive institutional programs are expected to achieve reductions in wet-weather exceedance days so as to meet the allowable wet-weather exceedance days set forth in the TMDL.
22. Regional solutions are a secondary resort in managing runoff and reducing bacteria loading at Mothers' Beach and the back basins of MdrH. However, due to scientific uncertainties it is not possible to guarantee that the implementation actions outlined in the Implementation Plan will achieve the necessary reductions in exceedance days as required by the TMDL. Therefore, it is essential to start the feasibility and conceptual analyses for regional solutions early in the implementation schedule, as proposed, in order to identify potential land requirements, physical limitations, and implementation issues. Because these regional solutions require a significant amount of time to plan and implement, beginning the feasibility analyses early will provide the responsible jurisdictions and agencies sufficient time to make changes and other arrangements and still keep to the implementation schedule.
23. Interested persons and the public have had reasonable opportunity to participate in the development and review of the Implementation Plan. The responsible jurisdictions and agencies held monthly meetings beginning in April 2004 to develop the Implementation Plan.
24. The final Implementation Plan submitted by the responsible jurisdictions and agencies to the Regional Board was posted on the Regional Board's website in advance of the April 6, 2006 Board hearing. A Notice of Hearing was published and circulated 30 days preceding Board action; Regional Board staff responded to oral and written comments received from the public; and the Regional Board held a public hearing on April 6, 2006 to consider support for the Implementation Plan.

THEREFORE, be it resolved that pursuant to Regional Board Resolution 2003-012, Attachment A, Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate Implementation Provisions for the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL, Table 7-5.1, "Implementation", adopted by the Regional Board on August 7, 2003 and effective on March 18, 2004:

1. The Regional Board hereby acknowledges the submission of a draft Implementation Plan and final Implementation Plan dated October 31, 2005 by responsible jurisdictions and agencies in the Marina del Rey Watershed, including the County of Los Angeles, Cities of Los Angeles and Culver City, and California Department of Transportation, per requirements of the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL as set forth in Resolution 2003-012, Attachment A, Table 7-5.3.

2. The Regional Board hereby determines that to receive approval for its integrated water resource approach, the responsible jurisdictions and agencies in the Marina del Rey Watershed as identified in (1) shall submit to the Executive Officer information that the Implementation Plan that they intend to pursue is an integrated water resources approach as defined in the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL, Table 7-5.1.
3. The Regional Board hereby determines that assuming the responsible jurisdictions and agencies in the Marina del Rey Watershed as identified in (1) adequately comply with the terms of this resolution, they will have demonstrated based on their conceptual plan the need for the longer implementation schedule as outlined in the final Implementation Plan dated October 31, 2005, which commits to a final compliance date of July 2021.
4. Given the conceptual commitments to an integrated water resources approach and to achieving final compliance by July 2021 outlined in the Implementation Plan, the Regional Board strongly supports and encourages the efforts of the responsible jurisdictions and agencies to (1) prior to the TMDL reconsideration clearly commit to specific actions to be conducted, (2) aggressively implement these actions as outlined in the Implementation Plan and (3) make timely adjustments and refinements to the Implementation Plan to ensure that bacteriological water quality impairments at Mothers' Beach and the back basins of Marina del Rey Harbor are resolved in the shortest possible timeframe.
5. The Regional Board encourages an integrated water resources approach and recognizes that additional time may be necessary to pursue such an approach to TMDL implementation. In order to clearly justify an extended implementation schedule beyond 10 years and up to 18 years from the effective date of the Santa Monica Bay Beaches Wet-Weather Bacteria TMDL, the responsible jurisdictions and agencies are required to submit additional quantifiable analyses as described below to demonstrate (1) the proposed plans will meet the waste load allocations (WLAs) and (2) the proposed implementation actions will achieve multiple water quality benefits and other public goals.

The Regional Board strongly encourages responsible jurisdictions and agencies pursuing an integrated water resources approach to employ natural methods as opposed to end-of-pipe, whenever it would be effective and feasible.

6. Per the provisions of the TMDL, the Regional Board will determine, when the TMDL is reconsidered in 2007, if a longer implementation schedule (up to 18 years from the effective date of the Santa Monica Bay Beaches Wet-Weather Bacteria TMDL) shall be granted if there is a clear demonstration that an integrated water resources approach will be pursued.

The types of approaches proposed coupled with quantifiable estimates of the integrated water resources benefits of the proposed structural and non-structural BMPs included in the Implementation Plan would provide the obligatory demonstration that an integrated water resources approach is being pursued. This demonstration shall provide numeric estimates of the benefits, including reductions in other pollutants, groundwater recharged, acres of multi-use projects and water (e.g. stormwater, runoff, wastewater) beneficially reused among other integrated water resources criteria outlined in the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL. Responsible jurisdictions and agencies should submit to the Regional Board technically defensible quantifiable estimates of integrated benefits for actions to be implemented during Phase I (July 2005 to June 2007) and Phase II (July 2007 to June

2012) of the wet-weather implementation schedule. This information must be submitted within 9 months to allow sufficient time for staff analyses prior to the Board's reassessment of the TMDL, scheduled for July 2007.

7. The Regional Board recognizes that it is critical to establish a technically defensible quantitative linkage to the final WLAs to measure progress toward achieving the WLAs. The linkage should include target reductions in stormwater runoff and/or total coliform, fecal coliform and enterococcus using the 90th percentile year for each individual subwatershed.

The Regional Board also recognizes that it is essential to establish quantitative estimates of the water quality benefits provided by the proposed structural and non-structural BMPs to be implemented during Phase I of the wet-weather implementation schedule, and preliminary estimates of the benefits provided by the proposed BMPs to be implemented during Phase II of the wet-weather implementation schedule. These estimates, including a quantitative analysis of their linkage to the WLAs, are necessary to provide assurance that the compliance deadline will be achieved given the uncertainties involved in an integrated water resources approach. Estimates should address reductions in exceedance days, bacteria concentration and loading, and flow in the drain and at each compliance monitoring location. Responsible jurisdictions and agencies should submit such information to the Regional Board within 9 months so that the Regional Board staff will have time to assess the information in time for the reconsideration of the TMDL.

8. The Regional Board hereby directs staff to develop draft language for Board consideration that incorporates into the Los Angeles County Municipal Separate Storm Sewer System (MS4) NPDES permit at reissuance explicit requirements for responsible jurisdictions and agencies to submit regular reports to the Board on progress toward achieving the required reductions set forth in the TMDL. The regular reports may be submitted as part of the Los Angeles County MS4 Annual Program and Annual Monitoring reports. Reports on progress toward compliance with the TMDL shall include data and information on (1) water quality improvements in the receiving water; (2) the effectiveness of BMPs implemented as part of the Implementation Plan measured in terms of water quality improvement and quantity of wet weather runoff reduced, captured, treated, or infiltrated; and (3) the performance of other programmatic solutions, source identification activities and source control measures. Data on water quality improvements may include for example reductions in exceedance days compared to historical data and proposed milestones, where appropriate; the proportion of wet-weather days that exceed the water quality objectives by storm year as defined in the TMDL; and corresponding rainfall data as set forth in the Marina del Rey Harbor Mothers' Beach and Back Basins Bacterial TMDL Coordinated Monitoring Plan submitted by responsible jurisdictions and agencies.

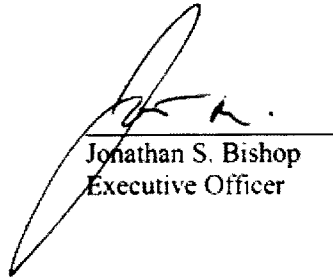
Given the iterative approach outlined in the Implementation Plan, reports shall also include documentation on changes and refinements to the Implementation Plan based on the results of monitoring data, data on BMP effectiveness, and evaluations of pilot projects and other implementation actions under consideration. Such updates to the Implementation Plan shall include revised quantitative estimates of the water quality benefits of the proposed BMPs and the linkage to the waste load allocations identified pursuant to (7) above.

9. The Regional Board hereby further directs staff to develop draft language for Board consideration that incorporates into the Los Angeles County MS4 NPDES permit at reissuance specific provisions to reopen the TMDL section of the permit and incorporate, after providing the opportunity for public comment, TMDL-related provisions as well as

additional implementation actions, including but not limited to institutional controls, source identification and control, and structural and treatment controls if adequate progress is not being made to achieve compliance with the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL.

10. The Regional Board anticipates that the California Department of Transportation (Caltrans), as a responsible agency, will work cooperatively with the responsible jurisdictions and agencies under the Los Angeles County MS4 NPDES permit to achieve compliance with the Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL, including requirements as set forth pursuant to (8) and (9) above. In the event that Caltrans decides to proceed independently to address compliance with the TMDL, Caltrans will be required to achieve compliance with the wet-weather allowable exceedance days by March 2014.
11. The Regional Board hereby encourages responsible jurisdictions and agencies to begin feasibility studies and planning for regional solutions to managing wet weather runoff and bacteria loading early in the implementation schedule to ensure sufficient time to redirect implementation activities if necessary to include regional solutions and still achieve the final compliance deadline of July 2021.

I, Jonathan Bishop, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on April 6, 2006.



Jonathan S. Bishop
Executive Officer

Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the Marina del Rey Harbor Mothers’ Beach and Back Basins Bacteria TMDL

Adopted by the California Regional Water Quality Control Board, Los Angeles Region on August 7, 2003.

Amendments:

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7-5 Marina del Rey Harbor Mothers’ Beach and Back Basins Bacteria TMDL

List of Figures, Tables and Inserts

Add:

Chapter 7. Total Maximum Daily Loads (TMDLs)

Tables

7-5 Marina del Rey Harbor Mothers’ Beach and Back Basins Bacteria TMDL

7-5.1. Marina del Rey Harbor Mothers’ Beach and Back Basins Bacteria TMDL: Elements

7-5.2. Marina del Rey Harbor Mothers’ Beach and Back Basins Bacteria TMDL: Final Allowable Exceedance Days by Sampling Location

7-5.3. Marina del Rey Harbor Mothers’ Beach and Back Basins Bacteria TMDL: Significant Dates

Chapter 7. Total Maximum Daily Loads (TMDLs) Summaries, Section 7-5 (Marina del Rey Harbor Mothers’ Beach and Back Basins Bacteria TMDL)

This TMDL was adopted by the Regional Water Quality Control Board on August 7, 2003.

This TMDL was approved by:

The State Water Resources Control Board on [Insert Date].

The Office of Administrative Law on [Insert Date].

The U.S. Environmental Protection Agency on [Insert Date].

The following table includes the elements of this TMDL.

Attachment A to Resolution No. 2003-012

Table 7-5.1. Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL: Elements

Element	Key Findings and Regulatory Provisions
<p><i>Problem Statement</i></p>	<p>Elevated bacterial indicator densities are causing impairment of the water contact recreation (REC-1) beneficial use at Marina del Rey Harbor (MdrH) Mothers' Beach and back basins. Swimming in marine waters with elevated bacterial indicator densities has long been associated with adverse health effects. Specifically, local and national epidemiological studies compel the conclusion that there is a causal relationship between adverse health effects and recreational water quality, as measured by bacterial indicator densities.</p>
<p><i>Numeric Target</i> <i>(Interpretation of the numeric water quality objective, used to calculate the waste load allocations)</i></p>	<p>The TMDL has a multi-part numeric target based on the bacteriological water quality objectives for marine water to protect the water contact recreation use. These targets are the most appropriate indicators of public health risk in recreational waters.</p> <p>These bacteriological objectives are set forth in Chapter 3 of the Basin Plan.¹ The objectives are based on four bacterial indicators and include both geometric mean limits and single sample limits. The Basin Plan objectives that serve as the numeric targets for this TMDL are:</p> <ol style="list-style-type: none"> <u>1. Rolling 30-day Geometric Mean Limits</u> <ol style="list-style-type: none"> a. Total coliform density shall not exceed 1,000/100 ml. b. Fecal coliform density shall not exceed 200/100 ml. c. Enterococcus density shall not exceed 35/100 ml. <u>2. Single Sample Limits</u> <ol style="list-style-type: none"> a. Total coliform density shall not exceed 10,000/100 ml. b. Fecal coliform density shall not exceed 400/100 ml. c. Enterococcus density shall not exceed 104/100 ml. d. Total coliform density shall not exceed 1,000/100 ml, if the ratio of fecal-to-total coliform exceeds 0.1. <p>These objectives are generally based on an acceptable health risk for marine recreational waters of 19 illnesses per 1,000 exposed individuals as set by the US EPA (US EPA, 1986). The targets apply throughout the year. The final compliance point for the targets is the point at which the effluent from a storm drain initially mixes with the receiving water where there is a freshwater outlet (i.e., publicly-owned storm drain) to the beach, or at ankle depth at beaches without a freshwater outlet, and at surface and depth throughout the Harbor. For Mothers' Beach the targets will apply at existing or new monitoring sites, with samples taken at ankle depth. For Basins D, E, and F the targets will also apply at existing or new monitoring sites with samples collected at surface and at depth.</p> <p>Implementation of the above bacteria objectives and the associated</p>

¹ The bacteriological objectives were revised by a Basin Plan amendment adopted by the Regional Board on October 25, 2001, and subsequently approved by the State Water Resources Control Board, the Office of Administrative Law and finally by U.S. EPA on September 25, 2002.

Attachment A to Resolution No. 2003-012

Element	Key Findings and Regulatory Provisions
	<p>TMDL numeric targets is achieved using a 'reference system/anti-degradation approach' rather than the alternative 'natural sources exclusion approach subject to antidegradation policies' or strict application of the single sample objectives. As required by the CWA and Porter-Cologne Water Quality Control Act, Basin Plans include beneficial uses of waters, water quality objectives to protect those uses, an anti-degradation policy, collectively referred to as water quality standards, and other plans and policies necessary to implement water quality standards. This TMDL and its associated waste load allocations, which shall be incorporated into relevant permits, and load allocations are the vehicles for implementation of the Region's standards.</p> <p>The 'reference system/anti-degradation approach' means that on the basis of historical exceedance levels at existing monitoring locations, including a local reference beach within Santa Monica Bay, a certain number of daily exceedances of the single sample bacteria objectives are permitted. The allowable number of exceedance days is set such that (1) bacteriological water quality at any site is at least as good as at a designated reference site within the watershed and (2) there is no degradation of existing bacteriological water quality. This approach recognizes that there are natural sources of bacteria that may cause or contribute to exceedances of the single sample objectives and that it is not the intent of the Regional Board to require treatment or diversion of natural coastal creeks or to require treatment of natural sources of bacteria from undeveloped areas.</p> <p>The geometric mean targets may not be exceeded at any time. The rolling 30-day geometric means will be calculated on each day. If weekly sampling is conducted, the weekly sample result will be assigned to the remaining days of the week in order to calculate the daily rolling 30-day geometric mean. For the single sample targets, each existing monitoring site is assigned an allowable number of exceedance days for three time periods (1) summer dry-weather (April 1 to October 31), (2) winter dry-weather (November 1 to March 31), and (3) wet-weather (defined as days with 0.1 inch of rain or greater and the three days following the rain event.)</p>
<i>Source Analysis</i>	<p>Dry-weather urban runoff and storm water conveyed by storm drains are the primary sources of elevated bacterial indicator densities to MdrH Mothers' Beach and back basins during dry and wet-weather. As of December 2002, there were seven dischargers located within the Marina del Rey watershed. These dischargers were issued general NPDES permits, general industrial and/or general construction storm water permits. The bacteria loads associated with these discharges are largely unknown, since most do not monitor for bacteria. However, these discharges are not expected to be a significant source of bacteria.</p> <p>Potential nonpoint sources of bacterial contamination at Mothers' Beach and the back basins of MdrH include marina activities such as waste disposal from boats, boat deck and slip washing, swimmer</p>

Attachment A to Resolution No. 2003-012

Element	Key Findings and Regulatory Provisions
	<p>“wash-off”, restaurant washouts and natural sources from birds, waterfowl and other wildlife. The bacteria loads associated with these nonpoint sources are unknown.</p>
<p><i>Loading Capacity</i></p>	<p>Studies show that bacterial degradation and dilution during transport from the watershed to the receiving water do not significantly affect bacterial indicator densities. Therefore, the loading capacity is defined in terms of bacterial indicator densities, which is the most appropriate for addressing public health risk, and is equivalent to the numeric targets, listed above. As the numeric targets must be met at the point where the effluent from storm drains initially mixes with the receiving water and back basins throughout the day, no degradation or dilution allowance is provided.</p>
<p><i>Waste Load Allocations (for point sources)</i></p>	<p>The Los Angeles County MS4 and CalTrans storm water permittees and co-permittees are assigned waste load allocations (WLAs) expressed as the number of daily or weekly sample days that may exceed the single sample targets identified under “Numeric Target” at a monitoring site. Waste load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection.</p> <p>The allowable number of exceedance days for a monitoring site for each time period is based on the lesser of two criteria (1) exceedance days in the designated reference system and (2) exceedance days based on historical bacteriological data at the monitoring site. This ensures that bacteriological water quality is at least as good as that of a largely undeveloped system and that there is no degradation of existing water quality.</p> <p>For each monitoring site, allowable exceedance days are set on an annual basis as well as for three time periods. These three periods are:</p> <ol style="list-style-type: none"> 1. summer dry-weather (April 1 to October 31) 2. winter dry-weather (November 1 to March 31) 3. wet-weather days (defined as days of 0.1 inch of rain or more plus three days following the rain event). <p>The County of Los Angeles, City of Los Angeles, Culver City, and California Department of Transportation (CalTrans) are the responsible jurisdictions and responsible agencies² for the Marina del Rey Watershed. The County of Los Angeles is the primary jurisdiction because Marina del Rey Harbor is located in an unincorporated area of the County, the County is the lead Permittee in the Los Angeles County Municipal Storm Water NPDES Permit (MS4) stormwater permit, and the Marina is owned and operated by the County of Los Angeles. The responsible jurisdictions and responsible agencies within the Marina del</p>

² For the purposes of this TMDL, “responsible jurisdictions and responsible agencies” are defined as (1) local agencies that are permittees or co-permittees on a municipal storm water permit, (2) local or state agencies that have jurisdiction over Mothers’ Beach or the back basins of MdrH, and (3) the California Department of Transportation pursuant to its storm water permit.

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Element	Key Findings and Regulatory Provisions
	<p>Rey Watershed are jointly responsible for complying with the waste load allocation at monitoring locations impacted by MS4 stormwater discharges. All proposed WLAs for summer dry-weather are zero (0) days of allowable exceedances.³ The proposed WLAs for winter dry-weather and wet-weather vary by monitoring location as identified in Table 7-5.2.</p> <p>The waste load allocation for the rolling 30-day geometric mean for the County of Los Angeles, City of Los Angeles, Culver City, and CalTrans is zero (0) days of allowable exceedances.</p> <p>As discussed in “Source Analysis”, discharges from general NPDES permits, general industrial storm water permits and general construction storm water permits are not expected to be a significant source of bacteria. Therefore, the WLAs for these discharges are zero (0) days of allowable exceedances for all three time periods and for the single sample limits and the rolling 30-day geometric mean. Any future enrollees under a general NPDES permit, general industrial storm water permit or general construction storm water permit within the Mdr Watershed will also be subject to a WLA of zero days of allowable exceedances.</p>
<p><i>Load Allocations (for nonpoint sources)</i></p>	<p>Load allocations are expressed as the number of daily or weekly sample days that may exceed the single sample targets identified under “Numeric Target” at a monitoring site. Load allocations are expressed as allowable exceedance days because the bacterial density and frequency of single sample exceedances are the most relevant to public health protection.</p> <p>Since all storm water runoff to MdrRH is regulated as a point source, load allocations of zero (0) days of allowable exceedances for nonpoint sources are set in this TMDL for each time period. The load allocation for the rolling 30-day geometric mean for nonpoint sources is zero (0) days of allowable exceedances. If a nonpoint source is directly impacting bacteriological quality and causing an exceedance of the numeric target(s), the permittee(s) under the Municipal Storm Water NPDES Permits are not responsible through these permits. However, the jurisdiction or agency adjacent to the monitoring location may have further obligations to identify such sources, as described under “Compliance Monitoring” below.</p>

³ In order to fully protect public health, no exceedances are permitted at any monitoring location during summer dry-weather (April 1 to October 31). In addition to being consistent with the two criteria, waste load allocations of zero (0) days of allowable exceedances are further supported by the fact that the California Department of Health Services has established minimum protective bacteriological standards – the same as the numeric targets in this TMDL – which, when exceeded during the period April 1 to October 31, result in posting a beach with a health hazard warning (California Code of Regulations, Title 17, Section 7958).

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Element	Key Findings and Regulatory Provisions
<i>Implementation</i>	<p>The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the CalTrans Storm Water Permit, general NPDES permits, general industrial storm water permits, general construction storm water permits, and the authority contained in Sections 13263 and 13267 of the Water Code. Each NPDES permit assigned a WLA shall be reopened or amended at reissuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement. Load allocations for nonpoint sources will be implemented within the context of this TMDL.</p> <p>This TMDL will be implemented in three phases over a ten-year period (see Table 7-5.3), unless an Integrated Water Resources Approach is implemented (in which case compliance must be achieved in the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria TMDL). Within three years of the effective date of the TMDL, there shall be no allowable exceedances of the single sample limits at any location during summer dry-weather (April 1 to October 31) or winter dry-weather (November 1 to March 31) and the rolling 30-day geometric mean targets must be achieved. The Executive Officer of the Regional Board may extend the compliance date no more than one year if he finds that there is insufficient capacity in the sewer line between Marina del Rey and the Hyperion Treatment Plant. Within ten years of the effective date of the TMDL, compliance with the allowable number of wet-weather exceedance days and rolling 30-day geometric mean targets must be achieved, unless an Integrated Water Resources Approach is implemented (in which case compliance must be achieved in the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria TMDL).</p> <p>For those monitoring locations subject to the antidegradation provision, there shall be no increase in exceedance days during the implementation period above the estimated days for the monitoring location in the critical year as identified in Table 7-5.2.</p> <p>The responsible jurisdictions and the responsible agencies must submit a report to the Executive Officer by July 30, 2005 (see Table 7-5.3) describing how they intend to comply with the dry-weather and wet-weather WLAs. As the primary jurisdiction, the County of Los Angeles is responsible for submitting the implementation plan report described above. In addition, the County of Los Angeles Department of Beaches and Harbor must submit a report detailing its efforts to prohibit discharges from boats in the Harbor (see Table 7-5.3).</p> <p>The Marina del Rey Harbor jurisdictional unit may change its primary jurisdiction by submitting a joint, written request, submitted by the current primary jurisdiction and the proposed primary jurisdiction, to the Executive Officer requesting reassignment of primary responsibility.</p>

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Element	Key Findings and Regulatory Provisions
	<p>The Regional Board intends to reconsider this TMDL, consistent with the scheduled reconsideration of the Santa Monica Bay (SMB) beaches TMDLs. The SMB beaches TMDLs are scheduled to be reconsidered in four years to re-evaluate the allowable winter dry-weather and wet-weather exceedance days based on additional data on bacterial indicator densities in the wave wash; to re-evaluate the reference system selected to set allowable exceedance levels; to re-evaluate the reference year used in the calculation of allowable exceedance days, and to re-evaluate the need for revision of the geometric mean implementation provision.</p> <p>The Regional Board intends to conduct a similar review of this TMDL within 4 years after the effective date. In addition, if a suitable reference watershed that is representative of an enclosed harbor has not been found by this time, the Regional Board may consider implementing a 'natural source exclusion approach subject to antidegradation policies' to the Marina del Rey Harbor in lieu of the 'reference watershed/antidegradation approach'.</p>
<i>Margin of Safety</i>	<p>A margin of safety has been implicitly included through several conservative assumptions, such as the assumption that no dilution takes place between the storm drain and where the effluent initially mixes with the receiving water, and that bacterial degradation rates are not fast enough to affect bacteria densities in the receiving water. In addition, an explicit margin of safety has been incorporated, as the load allocations will allow exceedances of the single sample targets no more than 5% of the time on an annual basis, based on the cumulative allocations proposed for dry and wet weather. Currently, the Regional Board concludes that there is water quality impairment if more than 10% of samples at a site exceed the single sample bacteria objectives annually.</p>
<i>Seasonal Variations and Critical Conditions</i>	<p>Seasonal variations are addressed by developing separate waste load allocations for three time periods (summer dry-weather, winter-dry weather, and wet-weather) based on public health concerns and observed natural background levels of exceedance of bacterial indicators.</p> <p>The critical condition for bacteria loading is during wet weather, when historic monitoring data for MDRH and the reference beach indicate greater exceedance probabilities of the single sample bacteria objectives then during dry-weather. To more specifically identify a critical condition within wet-weather, in order to set the allowable exceedance days shown in Table 7-5.2, the 90th percentile 'storm year'⁴ in terms of wet days⁵ is used as the reference year. Selecting the 90th percentile year avoids a situation where the reference system is frequently out of compliance. It is expected that because responsible jurisdictions and</p>

⁴ For purposes of this TMDL, a 'storm year' means November 1 to October 31. The 90th percentile storm year was 1993 with 75 wet days at the LAX meteorological station.

⁵ A wet day is defined as a day with rainfall of 0.1 inch or more plus the 3 days following the rain event.

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Element	Key Findings and Regulatory Provisions
	<p>agencies will be planning for this 'worst-case' scenario, there will be fewer exceedance days than the maximum allowed in drier years. Conversely, in the 10% of wetter years, it is expected that there may be more than the allowable number of exceedance days.</p>
<p>Compliance Monitoring</p>	<p>Responsible jurisdictions and agencies shall conduct daily or systematic weekly sampling at the initial point of mixing with the receiving water at all major drains⁶, at existing monitoring stations and at other designated monitoring stations to determine compliance.⁷ For Mothers' Beach the targets will also apply at existing or new monitoring sites, with samples taken at ankle depth. For Basins D, E, and F the targets will also apply at existing or new monitoring sites with samples collected at surface and at depth. Samples collected at ankle depth shall be taken on an incoming wave. At locations where there is a freshwater outlet, during wet weather, samples should be taken as close as possible to the initial point of mixing with the receiving water, and no further away than 10 meters down current of the storm drain or outlet.⁸ At locations where there is a freshwater outlet, samples shall be taken when the freshwater outlet is flowing into the surf zone.⁹</p> <p>If the number of exceedance days is greater than the allowable number of exceedance days, the responsible jurisdictions and agencies shall be considered out of compliance with the TMDL. Responsible jurisdictions or agencies shall not be deemed out of compliance with the TMDL if the investigation described in the paragraph below demonstrates that bacterial sources originating within the jurisdiction of the responsible agency have not caused or contributed to the exceedance.</p> <p>If a single sample shows the discharge or contributing area to be out of compliance, the Regional Board may require, through permit requirements or the authority contained in Water Code Section 13267, daily sampling where the effluent from the storm drain initially mixes with the receiving water or at the existing monitoring location (if it is not already) until all single sample events meet bacteria water quality objectives. Furthermore, if a location is out-of-compliance as determined in the previous paragraph, the Regional Board shall require responsible agencies to initiate an investigation, which at a minimum shall include daily sampling where the effluent from the storm drain</p>

⁶ Major drains are those that are publicly owned and have measurable flow to the beach during dry weather.

⁷ The frequency of sampling (i.e., daily versus weekly) will be at the discretion of the implementing agencies. However, the number of sample days that may exceed the objectives will be scaled by solving for the variable "X" in the following equation: (Number of wet-weather days or dry-weather days in 1993 / 365 days = X / 52 weeks), where the number of wet-weather days and dry-weather days are based on the historical rainfall record at the Los Angeles International Airport also known as "LAX".

⁸ Safety considerations during wet weather may preclude taking a sample at the initial point of mixing with the receiving water.

⁹ At some freshwater outlets and storm drains, during high tide conditions, the tide pushes the freshwater discharge back into the drain. As a result, sampling under these conditions is not representative of water quality conditions when the drain is flowing into the surf zone. The tide height at which this situation occurs will vary with the size, slope and configuration of the drain and the beach. Responsible agencies must ensure that samples are collected only when drains are flowing into the surf zone, not when the discharge is pushed back into the drain. Responsible agencies must submit a coordinated monitoring plan within 120 days of the effective date of the TMDL, in which this assurance should be included.

Attachment A to Resolution No. 2003-012

Element	Key Findings and Regulatory Provisions
	<p>initially mixes with the receiving water or at the existing monitoring location until all single sample events meet bacteria water quality objectives. If bacteriological water quality objectives are exceeded in any three weeks of a four-week period when weekly sampling is performed, or, for areas where testing is done more than once a week, 75% of testing days produce an exceedance of bacteria water quality objectives, the responsible agencies shall conduct a source investigation of the subwatershed(s) pursuant to protocols established under Water Code Section 13178. Responsible jurisdictions may wish to conduct compliance monitoring at key jurisdictional boundaries as part of this effort. If a location without a freshwater outlet is out-of-compliance or if the outlet is diverted or being treated, the adjacent municipality, County agency(s), or State or federal agency(s) shall be responsible for conducting the investigation and shall submit its findings to the Regional Board to facilitate the Regional Board exercising further authority to regulate the source of the exceedance in conformance with the Water Code.</p> <p>In addition, the Mdr responsible jurisdictions and responsible agencies are required to conduct a study to determine the relative bacterial loading from sources including but not limited to storm drains, boats, birds, and other nonpoint sources.. Once this study is completed in three years, the Regional Board will adjust the WLAs, if appropriate, based on the study, during the scheduled review of this TMDL.</p>

Note: The complete staff report for the TMDL is available for review upon request.

Attachment A to Resolution No. 03-012

Table 7-5.2. Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL: Final Allowable Exceedance Days by Sampling Location

Compliance Deadline		3 years after effective date ¹		3 years after effective date ¹		10 years after effective date ²	
Station ID	Location Name	Summer Dry Weather [^]		Winter Dry Weather ^{^*}		Wet Weather ^{^*}	
		April 1 - October 31	November 1 - March 31	November 1 - March 31	November 1 - October 31	Daily sampling (No. days)	Weekly sampling (No. days)
HYP (S9)	Mothers' Beach, at Lifeguard Tower	0	0	3	1	17	3
DHS (109a)	Mothers' Beach, at Playground Area	0	0	3	1	17	3
DHS (109b)	Mothers' Beach, between Lifeguard Tower and Boat Dock	0	0	3	1	17	3
DHS (109c)	Los Angeles County Fire Dock - end of main channel	0	0	3	1	17	3
DHB (MDR-8)	Mothers' Beach, near first slips outside swim area	0	0	3	1	17	3
DHB (MDR-18)	Mothers' Beach, 20 meters off of the wheel chair ramp	0	0	0	0	15	3
DHB (MDR-19)	Mothers' Beach, end of wheel chair ramp	0	0	3	1	17	3
DHB (MDR-9)	Basin F, innermost end	0	0	3	1	8	1
DHB (MDR-11)	End of Main Channel	0	0	3	1	17	3
DHB (MDR-10)	Basin E, near center of basin	0	0	3	1	17	3
DHB (MDR-20)	Basin E, in front of Tidegate from Oxford Basin	0	0	3	1	17	3

Notes: The number of allowable exceedances is based on the lesser of (1) the reference system or (2) existing levels of exceedance based on historical monitoring data. The allowable number of exceedance days during winter dry-weather is calculated based on the 10th percentile storm year in terms of dry days at the LAX meteorological station. The allowable number of exceedance days during wet-weather is calculated based on the 90th percentile storm year in terms of wet days at the LAX meteorological station.

- The Executive Officer of the Regional Board may extend the compliance date by no more than one year if he finds that there is insufficient capacity in the existing sewer line from Marina del Rey to the Hyperion Treatment Plant.
- If an Integrated Water Resources Approach is implemented, the compliance period must be the shortest time possible but not to exceed 18 years from the effective date of the Santa Monica Bay Beaches Bacteria Wet-Weather TMDL.

[^] A dry day is defined as a non-wet day. A wet day is defined as a day with a 0.1-inch or more of rain and the three days following the rain event.
^{*} A revision of the TMDL is scheduled for four years after the effective date of the Santa Monica Bay Beaches TMDLs in order to re-evaluate the allowable exceedance days during winter dry-weather and wet-weather based on additional monitoring data and the results of the study of relative loading from sources including but not limited to storm drains, boats, birds and other nonpoint sources.

Attachment A to Resolution No. 03-012

Table 7-5.3. Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL: Significant Dates

Date	Action
120 days after the effective date of the TMDL	<p>Responsible jurisdictions and responsible agencies shall submit coordinated monitoring plan(s) to be approved by the Executive Officer. The monitoring plans shall including a list of new sites^{2*} and/or sites relocated to include the point where the effluent from the storm drain initially mixes with the receiving water, at least three locations off of Mothers' Beach, and at least one location in each of the other Marina del Rey Basins (i.e., Basins A, B, C, E, F, G, and H). The plan shall include the responsible jurisdictions' and responsible agencies' recommended sampling frequency at each location.</p> <p>The Los Angeles County Department of Beaches and Harbors shall provide a written report to the Regional Board detailing efforts to control discharges from boats, including but not limited to the number of live-aboards and the number of pump-outs per month.</p> <p>The responsible jurisdictions and the responsible agencies must identify and provide documentation on small drains discharging to Mothers' Beach and the Marina del Rey Harbor. Documentation must include a report of waste discharge where necessary.</p>
<p>March 30, 2005 (Draft Report)</p> <p>July 30, 2005 (Final Report)</p>	<p>Responsible jurisdictions and responsible agencies shall provide a written report to the Regional Board outlining how each intends to cooperatively achieve compliance with the dry-weather and wet-weather TMDL Waste Load Allocations. The report shall include implementation methods, an implementation schedule, and proposed milestones.</p>
3 years after effective date of the TMDL	<p>Responsible jurisdictions and responsible agencies shall provide to the Regional Board results of the study conducted to determine the relative bacterial loading from sources including but not limited to storm drains, boats, birds and other nonpoint sources at the Oxford Flood Control Basin, Mothers' Beach, and the Harbor</p>
3 years after effective date of the TMDL	<p>Achieve compliance with the allowable exceedance days as set forth in Table 7-5.2 and rolling 30-day geometric mean targets during summer dry-weather (April 1 to October 31) and winter dry weather (November 1 to March 31). The Executive Officer of the Regional Board may extend the compliance date by no more than one year if he finds that there is insufficient capacity in the existing sewer line from Marina del Rey to the Hyperion Treatment Plant.</p>

² For those areas of the marina without an existing monitoring site, responsible jurisdictions and responsible agencies must establish a monitoring site if there is measurable flow from a publicly owned storm drain to the basin during dry weather.



APPENDIX C

Five Sites Selected for Structural BMP Construction – Operation and Maintenance Guidelines



C.1 Responsible Party

The Los Angeles County Department of Beaches and Harbors will be responsible for the operation and maintenance of installed BMPs.

C.2 Recordkeeping and Data Management

It is recommended that inspection logs, photographs, waste manifests, and other detailed notes be maintained to document operation and maintenance activities of all BMPs. Comprehensive records will assist with annual reporting to the Los Angeles Regional Water Quality Control Board and in the development of responses to California Water Code Section 13267 requests for information. Quantifying and documenting maintenance activities will also verify BMP effectiveness. Maintenance records should be retained for a minimum of five years.

C.3 BMP Effectiveness Monitoring

To evaluate the overall effectiveness of the BMP treatment train to reduce the target pollutants, it is essential to monitor the influent and effluent to assess compliance with the MdrH TMDLs and the potential use of these BMPs for other Water Quality Enhancement Projects. It is recommended that a BMP effectiveness monitoring plan be developed for the Water Quality Enhancement Projects.

C.4 BMP Inspection and Maintenance

BMP	Inspection/Maintenance	Frequency
Parking Lot 5 and Marina del Rey Library		
Bacteria™ Advanced Bioretention Technology	<ul style="list-style-type: none"> Cleanout trash and debris Inspect for accumulated pollutants Ensure cleanout frequency is adequate 	<ul style="list-style-type: none"> Prior to the rainy season After each storm event
Bioretention Planter	<ul style="list-style-type: none"> Inspect health of trees and groundcover Inspect for erosion Plants, soil, and mulch Landscaping Water 	<ul style="list-style-type: none"> Biannually
Catch Basins	<ul style="list-style-type: none"> Inspect overflow bypass Cleanout trash and debris 	<ul style="list-style-type: none"> Biannually
Rain Barrels	<ul style="list-style-type: none"> Inspect internally and externally Inspect downspouts Inspect for accumulated sediments Empty and clean barrel to remove sediment and debris 	<ul style="list-style-type: none"> Biannually
Estimated Annual Cost: \$30,000 to \$40,000		



BMP	Inspection/Maintenance	Frequency
Parking Lot 7		
Concave Bioretention Systems	<ul style="list-style-type: none"> Inspect for erosion and sediments Inspect for damage to vegetation Inspect for standing water Plants, soil, and mulch Landscaping Water 	<ul style="list-style-type: none"> Before major rainfall After wet season
Parkway Drain Overflow Outlets	<ul style="list-style-type: none"> Inspect for clogging Remove accumulated sediments 	<ul style="list-style-type: none"> Before major rainfall After wet season
Estimated Annual Cost: \$10,000 to \$20,000		

Parking Lot 9		
Cisterns	<ul style="list-style-type: none"> Inspect internally Inspect inflow and overflow pipes Inspect for accumulated sediment Inflow and overflow pipes Accumulated sediment 	<ul style="list-style-type: none"> Biannually
ClearWater BMP Filtration System Units	<ul style="list-style-type: none"> Inspect for accumulated pollutants Inspect to ensure cleanout frequency is adequate Vactor truck cleanout Replace sorbent sock 	<ul style="list-style-type: none"> Prior to the rainy season After each storm event
Flow-Through Planters	<ul style="list-style-type: none"> Inspect health of trees and groundcover Inspect for erosion Plants, soil, and mulch Landscaping Water 	<ul style="list-style-type: none"> Biannually
Sump Pumps	<ul style="list-style-type: none"> Visual inspection Test run 	<ul style="list-style-type: none"> Biannually
Estimated Annual Cost: \$125,000 to \$140,000		



BMP	Inspection/Maintenance	Frequency
Parking Lot 10		
Atlantis D-Raintank Mini Module	<ul style="list-style-type: none"> Visual inspection holes 	<ul style="list-style-type: none"> Prior to the rainy season After each storm event
Flow-Through Planters	<ul style="list-style-type: none"> Inspect health of trees and groundcover Inspect for erosion and sediments Plants, soil, and mulch Landscaping Water 	<ul style="list-style-type: none"> Biannually
Estimated Annual Cost: \$75,000 to \$85,000		

BMP	Inspection/Maintenance	Frequency
Parking Lot 11		
Bioretention Planter	<ul style="list-style-type: none"> Inspect for erosion Inspect for damage to vegetation Inspect for accumulated sediments Plants, soil, and mulch Landscaping Water 	<ul style="list-style-type: none"> Before major rainfall After wet season
Porous Pavement	<ul style="list-style-type: none"> Inspect for accumulated sediments Inspect for ponding water Inspect for oil drip accumulations Inspect for clogging Inspect overflow devices Vacuuming 	<ul style="list-style-type: none"> Annually After major storm events
Estimated Annual Cost: \$20,000 to \$30,000		



APPENDIX D

BMP Implementation Cost Estimates and Schedules



Nonstructural Best Management Practices – Potential Schedule Strategy for Implementation ¹ (Present Worth 2011 Dollars)										
Nonstructural Best Management Practices ²	2012	2013	2014	2015	2016	2017	2018	2019	2020	Totals
Birds	\$146,000	\$213,000	\$15,000	\$15,000	\$14,000	\$14,000	\$14,000	\$13,000	\$13,000	\$457,000
Boaters	-	-	\$23,000	\$45,000	\$22,000	\$2,000	\$77,000	\$74,000	\$72,000	\$315,000
Buildings	\$49,000	\$24,000	\$12,000	\$10,000	\$79,000	\$60,000	\$26,000	\$2,000	\$2,000	\$264,000
General	\$292,000	\$156,000	\$119,000	\$72,000	\$59,000	\$26,000	\$18,000	\$15,000	\$15,000	\$772,000
MS4 / Sewage	\$345,000	\$335,000	\$133,000	\$107,000	\$35,000	\$19,000	\$15,000	\$13,000	\$12,000	\$1,014,000
Parking Garage	-	\$12,000	\$7,000	\$18,000	\$32,000	\$30,000	\$13,000	\$8,000	\$8,000	\$128,000
Pets	-	-	\$23,000	\$23,000	\$45,000	\$31,000	\$29,000	\$16,000	\$8,000	\$175,000
Restaurants	\$34,000	\$81,000	\$78,000	\$94,000	\$48,000	\$41,000	\$13,000	\$11,000	\$10,000	\$410,000
Runoff	\$64,000	\$41,000	\$124,000	\$35,000	\$21,000	\$6,000	\$6,000	\$6,000	\$5,000	\$308,000
Streets	\$1,617,000	\$203,000	\$184,000	\$178,000	\$173,000	\$168,000	\$163,000	\$158,000	\$154,000	\$2,998,000
Trash	-	-	\$46,000	\$45,000	\$239,000	\$4,000	\$4,000	\$4,000	\$4,000	\$346,000
TOTAL (Nonstructural)	\$2,547,000	\$1,065,000	\$764,000	\$642,000	\$767,000	\$401,000	\$378,000	\$320,000	\$303,000	\$7,187,000

1) Table shows potential strategy to achieve compliance milestones published in the Toxics TMDL provided funding and resources are available. Additional monitoring and special studies may indicate that existing pollutant loading differs from that provided by the watershed model. Actual implementation of nonstructural and structural BMPs may be revised based on additional information provided by monitoring and/or special studies.

2) For more details on the costs for individual programs, see expanded table on the following page.



Pollutant Source	Source Priority	BMP Priority	Nonstructural Solution	Pilot Cost (Max)	Pilot Cost (Min)	Pilot Cost	O&M Cost	Start Year	2012	2013	2014	2015	2016	2017	2018	2019	2020
Restaurants	***	***	Targeted Restaurant Inspections	\$25,000	\$10,000	\$25,000	\$5,000	2004	\$15,000	\$10,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Streets	**	***	Aggressive Street Sweeping	\$2,000,000	\$300,000	\$1,200,000	\$100,000	2008	\$1,200,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Streets	**	**	Aggressive Parking Lot Sweeping	\$250,000	\$150,000	\$250,000	\$75,000	2008	\$250,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000
MS4 / Sewage	***	***	Storm Drain Stenciling Program	\$5,000	-	\$5,000	\$5,000	2010	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
General	***	***	Pollutant Loading Model and Database	\$250,000	\$150,000	\$250,000	\$10,000	2012	\$250,000	\$20,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
General	***	**	Total Suspended Solids / Pollutant Correlations	\$50,000	-	\$50,000	\$0	2012	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Birds	***	***	Bird Waste Maintenance Program	\$250,000	\$100,000	\$250,000	\$15,000	2012	\$150,000	\$100,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000
MS4 / Sewage	***	***	Jurisdictional Boundary Monitoring	\$300,000	-	\$300,000	\$0	2012	\$150,000	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MS4 / Sewage	***	***	MS4 / Storm Drain Survey	\$400,000	-	\$400,000	\$0	2012	\$200,000	\$200,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Restaurants	***	***	Restaurant Related Code Survey and Modification	\$125,000	\$75,000	\$100,000	\$500	2012	\$20,000	\$75,000	\$5,000	\$500	\$500	\$500	\$500	\$500	\$500
Streets	**	***	Aggressive Street Sweeping Public Outreach	\$50,000	\$10,000	\$30,000	\$0	2012	\$15,000	\$15,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Streets	**	**	Aerial Deposition Special Study	\$100,000	-	\$100,000	\$0	2012	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Streets	**	**	Brake Pad Partnership	\$100,000	-	\$100,000	\$25,000	2012	\$100,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Runoff	**	***	Cistern / Rain Barrel Code Modification	\$25,000	-	\$25,000	\$500	2012	\$15,000	\$7,500	\$2,500	\$500	\$500	\$500	\$500	\$500	\$500
Runoff	**	***	Over Irrigation Code Modification	\$75,000	\$25,000	\$75,000	\$500	2012	\$50,000	\$20,000	\$5,000	\$500	\$500	\$500	\$500	\$500	\$500
Buildings	*	***	New Construction Permit / SWPPP Evaluation	\$100,000	\$75,000	\$87,500	\$1,000	2012	\$50,000	\$25,000	\$12,500	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
General	***	***	Life Guard Outreach Program	\$50,000	\$25,000	\$50,000	\$2,500	2013		\$20,000	\$20,000	\$10,000	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500
General	***	**	Collaborative Environmentally Friendly Alternative Services Program	\$300,000	\$150,000	\$300,000	\$2,000	2013		\$125,000	\$100,000	\$35,000	\$30,000	\$5,000	\$5,000	\$2,000	\$2,000
Birds	***	**	RV Over Night Parking Source Evaluation & Ordinance Change Program	\$125,000	\$75,000	\$125,000	\$1,000	2013		\$125,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Runoff	**	***	Green Gardening and Runoff Reduction Outreach	\$25,000	\$15,000	\$25,000	\$1,000	2013		\$15,000	\$7,000	\$3,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Parking Garage	**	***	Parking Garage Outreach Program	\$25,000	\$10,000	\$25,000	\$1,000	2013		\$12,500	\$7,500	\$5,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
MS4 / Sewage	***	**	Targeted Aggressive MS4 and Catch Basin Cleaning Program	\$200,000	\$100,000	\$200,000	\$10,000	2014			\$100,000	\$75,000	\$25,000	\$10,000	\$10,000	\$10,000	\$10,000
Restaurants	***	**	Business-Run Inspection Program - Feasibility Evaluation	\$100,000	\$50,000	\$100,000	\$0	2014			\$75,000	\$25,000	\$0	\$0	\$0	\$0	\$0
Trash	**	***	Trash Receptacle Management Outreach	\$50,000	\$10,000	\$50,000	\$500	2014			\$50,000	\$500	\$500	\$500	\$500	\$500	\$500
Runoff	**	**	Green Gardening / Runoff Reduction Incentive Program	\$150,000	\$50,000	\$150,000	\$2,500	2014			\$100,000	\$30,000	\$20,000	\$2,500	\$2,500	\$2,500	\$2,500
Runoff	**	**	Irrigation Enforcement Program	\$25,000	\$10,000	\$25,000	\$2,000	2014			\$20,000	\$5,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
Boaters	**	***	Environmentally Friendly Boating Guide / Boater Outreach	\$100,000	\$50,000	\$100,000	\$2,000	2014			\$25,000	\$50,000	\$25,000	\$2,000	\$2,000	\$2,000	\$2,000
Pets	*	**	Doggie Bag Dispenser Pilot Program	\$50,000	\$25,000	\$50,000	\$2,000	2014			\$25,000	\$25,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
MS4 / Sewage	*	*	Onshore Restroom Dye Study	\$50,000	-	\$50,000	\$0	2014			\$40,000	\$10,000	\$0	\$0	\$0	\$0	\$0
General	***	*	Product Substitution Campaign (General)	\$75,000	\$50,000	\$75,000	\$4,000	2015				\$25,000	\$25,000	\$12,500	\$4,167	\$4,167	\$4,167
Restaurants	***	*	Business-Run Inspection Program - Incentive Program	\$150,000	\$100,000	\$150,000	\$2,500	2015				\$75,000	\$50,000	\$25,000	\$2,500	\$2,500	\$2,500
Trash	**	**	Targeted Trash Receptacle Inspection Program	\$50,000	\$25,000	\$50,000	\$1,500	2015				\$50,000	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
Parking Garage	**	**	Targeted Parking Garage Inspections	\$20,000	\$10,000	\$20,000	\$4,000	2015				\$15,000	\$5,000	\$4,000	\$4,000	\$4,000	\$4,000
MS4 / Sewage	*	**	Community Based Social Marketing - Restrooms	\$50,000	\$25,000	\$50,000	-	2015				\$30,000	\$10,000	\$7,500	\$2,500	\$500	\$500
Buildings	*	**	Alternatives to Architectural Copper Program	\$300,000	\$100,000	\$200,000	\$1,000	2015				\$10,000	\$90,000	\$70,000	\$30,000	\$1,000	\$1,000
Trash	**	-	Trash/Sweeping Program - Education & Incentive Program	\$75,000	\$50,000	\$75,000	\$500	2016					\$75,000	\$500	\$500	\$500	\$500
Trash	**	-	Trash/Sweeping Program (Pilot Study)	\$200,000	\$100,000	\$200,000	\$1,500	2016					\$200,000	\$1,500	\$1,500	\$1,500	\$1,500
Pets	*	**	Pet Waste Outreach and Incentive Program	\$100,000	\$50,000	\$80,000	\$2,000	2016					\$50,000	\$30,000	\$2,000	\$2,000	\$2,000
Parking Garage	**	*	Parking Garage Structural BMP Incentive Program	\$100,000	\$50,000	\$75,000	\$5,000	2016					\$30,000	\$30,000	\$10,000	\$5,000	\$5,000
Restaurants	***	*	Business-Run Inspection Program - Targeted Restaurant Inspections	\$25,000	\$10,000	\$25,000	\$4,000	2017						\$17,500	\$7,500	\$5,000	\$4,000
Pets	*	*	Pet Waste Code Survey and Modification	\$5,000	-	\$5,000	\$1,000	2017						\$5,000	\$1,000	\$1,000	\$1,000
Boaters	**	*	Oil Container Recycling Program	\$500,000	\$50,000	\$275,000	\$2,000	2018							\$91,667	\$91,667	\$91,667
Pets	*	**	Pet Waste Code Enforcement	\$50,000	\$25,000	\$50,000	\$2,000	2018							\$30,000	\$15,000	\$5,000
Annual Total									\$2,620,000	\$1,125,000	\$831,000	\$717,000	\$884,000	\$472,000	\$456,000	\$400,000	\$389,000
Present Worth (2011 \$)									\$2,544,000	\$1,061,000	\$761,000	\$638,000	\$763,000	\$396,000	\$371,000	\$316,000	\$298,000
Present Worth Cumulative Total (2011 \$)									\$2,544,000	\$3,605,000	\$4,366,000	\$5,004,000	\$5,767,000	\$6,163,000	\$6,534,000	\$6,850,000	\$7,148,000

NOTE: The relative priorities for pollutant sources and individual best management practices (BMPs) are discussed in Section 4.0. Highest priority (three star, ***) BMPs build upon existing projects/programs or have been identified as a recommended activity in a previous study. Higher priority (two star, **) BMPs are implemented after Highest priority BMPs, given available resources and ongoing water quality need. Similarly, Lowest priority (one star, *) BMPs are implemented depending upon available funds, resources, and needs. Within each pollutant source category, individual BMPs were prioritized using a similar relative scale for prioritizing project/program implementation.



Structural Best Management Practices – Potential Schedule Strategy for Implementation ¹ (Present Worth 2011 Dollars)										
Structural Best Management Practices	2012	2013	2014	2015	2016	2017	2018	2019	2020	Totals
Five Sites										
<i>Parking Lot 5 & MdR Library</i>	\$43,700	\$14,200	\$189,000	\$4,500	\$4,400	\$4,200	\$4,100	\$4,000	\$3,900	\$272,000
<i>Parking Lot 7</i>	-	\$49,500	\$16,100	\$239,900	\$1,800	\$1,700	\$1,700	\$1,600	\$1,600	\$314,000
<i>Parking Lot 9</i>	-	-	\$72,100	\$23,400	\$448,600	\$26,200	\$25,500	\$24,700	\$24,000	\$645,000
<i>Parking Lot 10</i>	-	\$63,700	\$20,600	\$346,600	\$3,500	\$3,400	\$3,300	\$3,200	\$3,100	\$448,000
<i>Parking Lot 11</i>	\$51,000	\$16,500	\$297,500	\$11,200	\$10,800	\$10,500	\$10,200	\$9,900	\$9,600	\$428,000
Redevelopment²	-	-	-	-	-	-	-	-	-	-
Additional County Projects	-	\$489,000	\$677,000	\$658,000	\$1,212,000	\$387,000	\$376,000	\$365,000	\$355,000	\$4,519,000
Projects on Leased Parcels	-	-	\$2,261,000	\$2,195,000	\$2,131,000	\$2,069,000	\$2,009,000	\$1,950,000	\$1,894,000	\$14,509,000
TOTAL (Structural)	\$94,700	\$632,900	\$3,533,300	\$3,478,600	\$3,812,100	\$2,502,000	\$2,429,800	\$2,358,400	\$2,291,200	\$21,135,000
<p>1) Table shows potential strategy to achieve compliance milestones published in the Toxics TMDL provided funding and resources are available. Additional monitoring and special studies may indicate that existing pollutant loading differs from that provided by the watershed model. Actual implementation of nonstructural and structural BMPs may be revised based on additional information provided by monitoring and/or special studies.</p> <p>2) Redevelopment will be subject to the county <i>Standard Urban Storm Water Mitigation Plan (SUSMP)</i> requirements, which requires BMP implementation at the developer's expense.</p>										



Typical Rainwater Harvesting - Cistern BMP - Single BMP Cost Estimate

Design Approach

Rooftop surface area	2,275	ft ²		
Landscape Area	1,710	ft ²		
Design Storm	1.25	inches		
Tank Size	1,000	gal		
Number of Tanks	2	ea		
Maximum Captured Volume/event	241	cf	0.006	ac-ft
Tributary Area	0.09	acres		
Yearly maintenance cost =	\$500	Year inspection (repairs every few years)		

Item	Quantity	Units	Unit Price	Total
1000-gallon fiberglass cistern	2	EA	\$1,000.00	\$2,000.00
7'X7'X0.5' Pad for Cistern	2	EA	\$800.00	\$1,600.00
System controller	2	EA	\$400.00	\$800.00
Irrigation Pump	2	EA	\$600.00	\$1,200.00
Shut Off Valve (installed in existing irrigation system)	2	EA	\$150.00	\$300.00
First Flush Diversion w/ drain system	2	EA	\$650.00	\$1,300.00
Misc Piping, fitting, etc.	2	LS	\$500.00	\$1,000.00
System Installation	2	LS	\$1,000.00	\$2,000.00
Controller Electrical Connection	2	LS	\$800.00	\$1,600.00
New Subsurface Drip Irrigation	1,710	SF	\$2.40	\$4,104.00
Construction BMPs				
Construction Fence	100	LF	\$4.00	\$400.00
Gravel Bag	25	EA	\$1.82	\$45.50
Traffic Control	1	LS	\$500.00	\$500.00
Construction Subtotal				\$16,850
Engineering Design - 40% of construction subtotal				\$6,740
Construction Total				\$23,590

Assumptions:

System has two pumps and one controller.

New shutoff valves shall be installed in the existing irrigation system to prevent the existing system from being used when cisterns contain water.

New, subsurface irrigation installed.

No cross connection with potable water and existing system.

First-flush diverter (15-gallon capacity) installed and connected to smaller drip irrigation system.



Typical Porous Pavement - No Underdrain - Single BMP Cost Estimate

Design Approach

Land Use Runoff Coefficient "C"	0.85		
Design Storm	1.10	in	
percolation rate =	0.5	in/hr	
Depth of rock base	1	ft	
Maximum depth of rock reservoir	1.5	ft	
Width (assume parking stall)	18	ft	
Length (assume 15 parking stalls)	135	cf	
Rock Porosity (n)	0.35		
Captured Volume/slab =	1,276	cf	0.029 ac-ft
Tributary Drainage Area	0.38		
% of total cost for maintenance (yearly)	1.5%		
Yearly maintenance cost =	\$1,228	Vacuum Truck once per year	

Item	Quantity	Units	Unit Price	Total
Saw cut existing AC/PCC	171	lf	\$5.12	\$875.52
AC Pavement Removal	2430	sf	\$3.36	\$8,164.80
Excavation and export	90	cy	\$44.28	\$3,985.20
Subgrade Preparation	2430	sf	\$0.84	\$2,041.20
5.5" Pervious Concrete	2430	sf	\$11.55	\$28,066.50
1" #4 Over 11" 1-1/2" Wash Aggregate	90	cy	\$85.00	\$7,650.00
Filter Fabric	2430	sf	\$1.50	\$3,645.00
Containment Curb (0" per G-1)	171	lf	\$14.61	\$2,498.31
Construction BMPs				
Gravel Bags	171	each	\$1.82	\$311.22
Construction Fence	306	lf	\$4.00	\$1,224.00
Construction Subtotal				\$58,462
Engineering Design - 40% of construction subtotal				\$23,385
Construction Total				\$81,847

Assumptions:

- Excavated soil is not contaminated
- Does not include soil evaluation costs (required to determine percolation)
- Does not include property costs
- Does not include design plans
- Does not include permitting (if applicable)



Typical Bioretention System (Porous Conc. Parking Stalls used for capture) - Single BMP Cost Estimate

Design Approach

Filter Width	9	ft		
Typical Length is (Parking stalls)	18	ft		
Number of Parking Stalls	24	ea		
Rock Reservoir Depth	1.5	ft		
Rock Porosity (n)	0.35			
Number of Bioretention Planters	10	ea		
Maximum Captured Volume/event	2,041	cf	0.047	ac-ft
Tributary Drainage Area	1.11	acres		
Cost for maintenance (yearly)	\$600	Vacuum Truck		

Item	Quantity	Units	Unit Price	Total
Sawcut AC	474	LF	\$2.00	\$948.00
Replace 1' Wide AC	474	SF	\$6.00	\$2,844.00
Porous Pavement	3,774	SF	\$11.50	\$43,401.00
Removal of existing AC	4,248	SF	\$2.00	\$8,496.00
3/4 Inch Gravel, 18-inch depth under porous pvmt.	210	CY	\$55.00	\$11,550.00
6" Curb (if curb cannot be protected-in-place)	204	LF	\$11.00	\$2,244.00
Cutoff Wall (1' wide X 5' Deep)	48	LF	\$75.00	\$3,600.00
3-inch River Rock	14	CY	\$75.00	\$1,050.00
3/4" Gravel	54	CY	\$55.00	\$2,970.00
Amended Soils	292	CY	\$65.00	\$18,980.00
4" Perforated Pipe	2660	LF	\$4.00	\$10,640.00
Protect-in-place utilities	1	LS	\$1,500.00	\$1,500.00
Barrier Filter Fabric	2900	SF	\$1.30	\$3,770.00
Permeable Filter Fabric (Mirifa 1100N or eq.)	7600	SF	\$1.30	\$9,880.00
Salvage and relocate existing irrigation	1	LS	\$800.00	\$800.00
6" Curb (curb face = 0 in. around porous pvmt.)	450	LF	\$11.00	\$4,950.00
Cut 3' slots into Curb	4	EA	\$450.00	\$1,800.00
Grading & Export	570	CY	\$44.28	\$25,239.60
Landscaping	1110	SF	\$3.50	\$3,885.00
Construction BMPs				
Erosion Control	1	LS	\$4,000.00	\$4,000.00
			Construction Subtotal	\$162,548
			Engineering Design - 20% of construction subtotal	\$32,510
			Construction Total	\$195,058